Food Storage Cooking School

"Use It or Lose It!"

by

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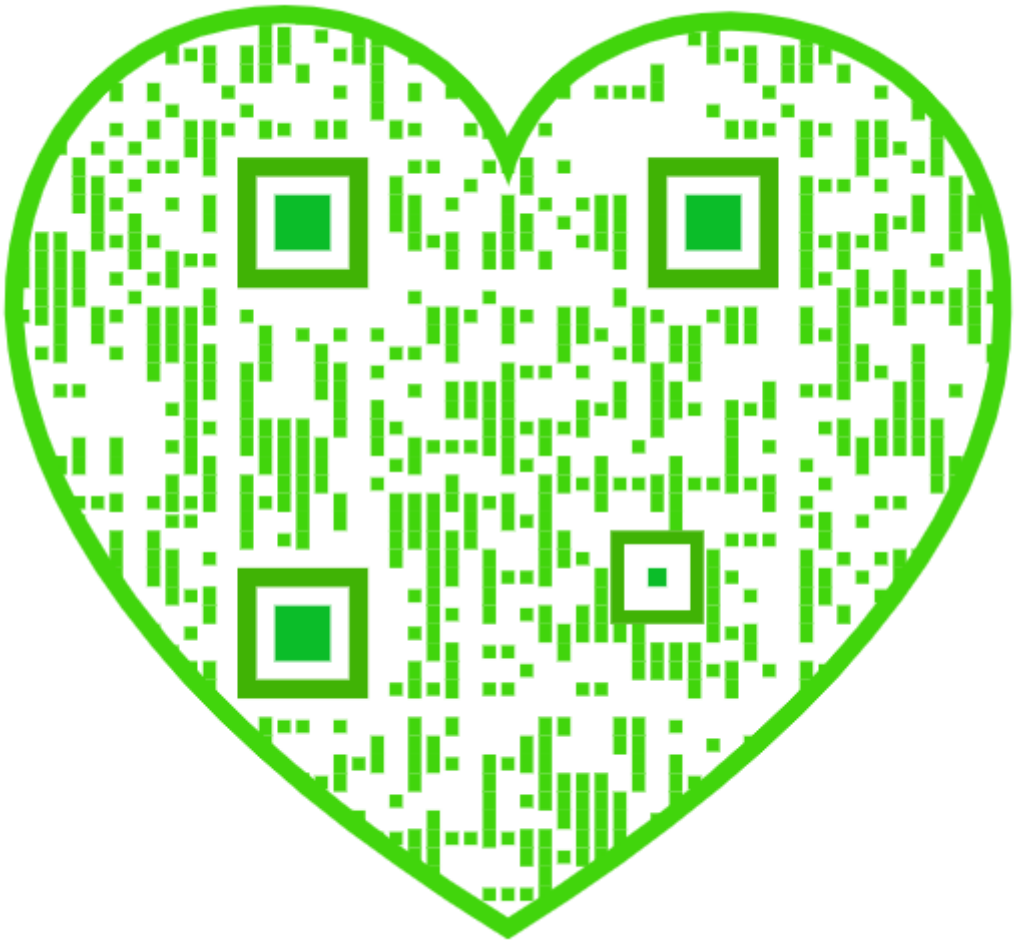

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Contents

Page

1. Introduction 1-1

2. Overview: Building a Storage Foundation 2-1
    Teaching Notes 2-1
    Food and Water Storage Survey 2-4
    Overheads 2-5

3. Simple Storage Guides: “Get It Done and Check It Off” 3-1

4. Types of Storage 4-1
    Teaching Notes 4-1
    Overheads 4-4
    72 Hour Home Emergency Kit Handout 4-9

5. Current Storage: “How Much Do You Now Have?” Nutrition Inventory 5-1
    Teaching Notes 5-1
    Overheads 5-4
    Food and Water Storage Nutrition Inventory Handout 5-8

6. How to Store What You Use 6-1
    Teaching Notes 6-1
    Food Storage Planner Handout 6-2
    Overhead 6-7

7. Water Storage 7-1
    Teaching Notes 7-1
    Overheads 7-5

8. “How Old Is TOOO Old?“ 8-1
    Teaching Notes 8-1
        Safety of Stored Foods 8-1
        Quality of Stored Foods 8-2
        Nutritional Value of Stored Foods 8-2
        Storage Conditions 8-3
        Using Old Food 8-4
    Overheads 8-5
    Shelf Life of Stored Foods Handout 8-10
    Shelf Life Reference Tables 8-13
    Using Old Stored Food Handout 8-19
        Recipe Ideas 8-20
    Demonstration—Taste Test 8-22

Contents Continued

Page

9. Rotating and Keeping an Inventory 9-1
    Teaching Notes 9-1
    Inventory Sheet Sample Handout 9-3

10. Where to Store It 10-1
    Teaching Notes 10-1
    How and Where To Store It Handout 10-2
        Containers 10-2
        Pest Control 10-2
        Ideal Storage Conditions 10-5
        Finding Storage Places 10-5
    Food Storage Rolling Shelves Plan 10-7

11. “Use It or Lose It...” Stored Wheat, Rice, Dry Milk, Beans 11-1
    Teaching Notes 11-1
    Overheads 11-3
    Wheat Handout 11-5
        Recipe Ideas 11-7
    Dry Beans Handout 11-10
        Recipe Ideas 11-13
    Rice Handout 11-16
        Recipes 11-18
    Dry Milk Handout 11-20
        Recipes 11-22

12. Building a Storage Program 12-1
    Teaching Notes 12-1
    Building Storage Program Handout 12-3

13. References 13-1

1. Introduction

This book has been compiled to assist individuals in practical acquisition and use of food storage. It is designed for personal use or as a teaching tool for non-profit groups. Sections contain teaching notes, overheads, and handouts. Materials may be duplicated for non-profit use as long as Utah State University Extension credit appears on each page. Since food storage should be a work in progress, so is this guide. Comments and suggestions are welcome for future editions.

2. Overview: Building a Storage Foundation, Storage Attitudes and Habits

Teaching Notes

I. Prior to class hand out the **"Food and Water Storage Survey."** Prior to the first class, ask participants to fill out survey prior to class. This survey may be used as a discussion tool later; as a conclusion to the food storage course; used by the instructor to determine what sections of the food storage book will be most useful; or as the instructor sees fit. It is also helpful for participants to analyze their own storage attitudes and where they need to focus.

II. There are many reasons individuals store food. Rather than the instructor making a list to give class members, ask the class participants why they store food. Use the **overhead "Why Store Food and Water?"** to record the answers participants give as their food storage reasons and attitudes (list common reasons given). One side of the overhead can be used to record storage attitudes; the other side can be used to record answers given by class members in #III "why we eat the foods we eat." This discussion will allow the instructor to assess the attitudes and background of participants. It may be helpful for the instructor to list his/her own responses prior to class. (Use overhead for writing down reasons given by participants.)

A.
B.
C.
D.
E.
F.
G.
H.

III. We choose to eat the foods we do for a variety of reasons. Once again, ask the class to give their reasons and record answers on the **overhead "Why Store Food and Water?"** on the second half of the page. Possible answers are listed in the notes below. Instructors may wish to add their own responses. (Overhead—side by side with reasons for storage.)

A. Taste—The number one reason we choose to eat the foods we do.
B. Culture
C. Heritage—Family
D. Time
E. Money
F. Convenience
G. Availability
H.

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Ask the Question:
Are the reasons you eat the foods you do the same as the reasons you store? If not, does your food storage need to be reevaluated in order to "store what you use and use what you store"?

IV. Costly food and water storage attitudes and actions.

Illustration: Waste present or future.
Ask a participant for a $10.00 bill. Ask the participant to tear up the bill. Then ask the participant to throw it away. The participant will be reluctant, alarmed, hesitant, or shocked. Ask the participant how he or she feels about throwing the money away. Discuss with the group why the participant feels this way. Ask the group to show by the raise of hands how many have thrown away food storage in the last week, month, year—for whatever reason. Discuss with the group what are the cost of throwing away food storage. (Wasted time, money, energy, food resources, etc.) Discuss with the group the difference between throwing away food storage because it is too old or throwing away a $10.00 bill.

Use **overhead "Cost of Wasted Food and Water Storage"** to discuss the loss of money, time, resources when stored food is not used and later thrown out. Answers on the overhead follow.

A. Loss of money—may cost more to replace today than it cost yesterday.
B. Security loss—if it is spoiled it cannot be eaten; what cannot get past the nose will not be eaten unless extreme starvation circumstances exist—thus no security.
C. Quality of food loss—food will never be fresher than it is the day it is stored.
D. Loss of self sufficiency—more dependent upon others.

V. The following attitudes and actions result in wasted foods. Use **overhead "Costly Food and Water Storage Attitudes"** to discuss actions associated with food loss. Food stored properly will be a source of security, preparedness, and aid in the management of available resources to the family.

A. Saving food and water for use only in time of emergency.
B. Storing what someone else outlines (not personalizing).
C. Storing foods family does not like and or will not eat.
D. Not rotating foods in storage.
E. Not developing habits or using skills necessary to utilize storage.
F. Placing storage in unaccessible locations.
G. Placing storage in adverse storage conditions.
H.
I.

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VI. Use **overhead "Objectives"** to discuss the objectives of any food storage program. Those objectives should:

A. Help participants manage and balance their resources of time, money, energy, and food.

B. Provide practical food storage help in order to use what is stored and store what is used.

C. Provide participants with food safety guidelines to ensure a safe and usable storage program.

D. Provide participants with food storage guidelines which will maintain the quality of food stored—high nutrition and high eating quality (flavor, texture, color, and odor).

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Survey "Food Storage Attitudes"

Food and Water Storage Survey

How long has your food and water been stored?

1._____ More than a year
2._____ At least one year
3._____ 6 months to a year
4._____ 1 month to 6 months
5._____ less than a month
6._____ a week or less
7._____ have no idea

Do You Store the Following?		How Old	How Often Do You Currently Use It?
Wheat	Yes No		Daily Weekly Monthly Yearly Rarely Never
Dry Beans/Legumes	Yes No		Daily Weekly Monthly Yearly Rarely Never
Rice	Yes No		Daily Weekly Monthly Yearly Rarely Never
Dry Milk	Yes No		Daily Weekly Monthly Yearly Rarely Never
Dry Foods	Yes No		Daily Weekly Monthly Yearly Rarely Never
Canned Fruit	Yes No		Daily Weekly Monthly Yearly Rarely Never
Canned Vegetables	Yes No		Daily Weekly Monthly Yearly Rarely Never
Water	Yes No	Do you inventory it at least yearly? Yes No	

For each food check **one** box that describes the **main** reason you do not use that item **more** often.

	Wheat	Beans	Rice	Dry Milk	Dried Foods	Canned Fruits	Canned Vegetable	Water
Inconvenient to prepare								
Do not like taste								
Forget it is there								
Difficult/awkward to get to								
Do not know how to use								
Do not have equipment								
Do not have recipes for it								
Saving it for an emergency								
Other (list)								

List three reasons you stored the basics?

1.
2.
3.

List the number of family members in each category?

_____ Adults
_____ Teenager (13-20 yrs)
_____ Children (8-12 yrs)
_____ Children (5-8 yrs)
_____Preschool (1-5 yrs)
_____ Infants (0-1 yr)

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Overhead "Why Store Food and Water?"

Reasons to Store Food & Water	Reasons We Eat Foods We Do
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

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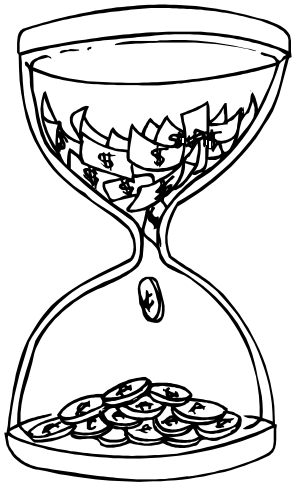
Overhead “Cost of Wasted Food Storage”

Lost Money

Lost Security

Lost Food Quality

Lost Self Sufficiency



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Costly Food Storage Attitudes

* *Storing poor quality food*
* *Saving food for use only in an emergency*
* *Storing what someone else outlines (not personalizing)*
* *Storing foods family does not like*
* *Not rotating stored foods*
* *Not developing habits or skills necessary to use storage*
* *Placing storage in unaccessible locations*
* *Placing storage in adverse storage conditions*

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Workshop Objectives

** Assist in Managing Resources
(time, money, energy, food)

** Keep Food & Water Storage Practical

** Provide Safety Guidelines

** Maintain Quality of Foods
(color, texture, flavor, odor)

** Maintain Nutrition of Foods

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3. Simple Storage Guides: "Get It Done and Check It Off"

This section is included for individuals wishing to check food storage off their list of things to do. It is simple and quick, but a word of caution—any food storage program must be used. No food lasts indefinitely (for more information on shelf life, see the "Shelf Life" section). If food in storage is not used and rotated with fresh items, it will become a waste of time, money, and resources. The very reasons the food was stored (security, obedience, investment, etc.) will be lost. Just because the storage is in the house does not mean the storage is complete. Use it.

WHO should store food?

It is prudent and wise for every household to have some food stored for use in time of need. We never know what emergency may befall us during which we may not be able to obtain food or drink. The emergency may be loss of job or ability to work due to accident or illness. This may result in a situation where financial resources to purchase food would not be available or may be decreased appreciably. Natural catastrophes such as floods, earthquakes, or storms may result in temporary inability to distribute food to supermarkets. Under these conditions even having money to purchase food does not mean it can be obtained.

Even in the United States each of the above conditions occurs occasionally. Because of the possibility of such emergencies the Civil Defense recommends storing food and drink adequate for your family's needs for a two-week period. Certain church organizations have recommended their members have on hand a year's supply of food, clothing, and where permitted, fuel, as well as some accessible cash.

WHAT constitutes food storage?

Food storage is <u>any</u> food stored to be eaten at a later time—4 hours, 4 months, or 4 years. Food storage is any food in the refrigerator, in the freezer, on the shelf, in the garden, on the tree, livestock, etc.

WHY store food?

There are two main reasons for food storage: (1) To practice wise management of available resources. (2) To provide for ourselves and our family members in an emergency. The big motivator is to avoid hearing a hungry child cry. Even the most "macho" man is distraught if he cannot provide food or beverage to prevent a child from suffering.

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HOW MUCH of WHAT should be stored?

** 1 gallon of water per person per day

An individual may be able to survive many days without food, but only a few days without water. Therefore, a recommended amount of water to store is 1 gallon per person per day for about 2 weeks. Most homes contain a 25-60 gallon water heater. This will provide a source of fresh water. It is also recommended you store additional water in food grade containers on a shelf or platform off the floor. Storing additional water outside the water heater is prudent in case the water supply in the water heater becomes contaminated from an outside water source prior to shutting off that outside source. (For additional information on water storage see the "Water Storage" section.)

** 1 pound dry matter per person per day

One pound of dry matter provides about 1600 calories of energy. Dry matter may consist of dried beans and legumes, wheat, flour, rice, sugar, dried fruits and vegetables, pastas, dried milk, etc. Because energy is the most critical need (other than water) in a food storage program it must be considered first. Other nutrients such as protein, vitamins and minerals may be sacrificed for short periods of time (up to 3 months) with little ill effect. But since the diet would be very boring if the only thing available to eat were wheat it is advised you include a variety of dried items. (For more information on how much of what should be stored refer to "How to Store What You Use" section.)

WHERE food should be stored

A chemical law says that for every 10 degree rise in temperature there is a doubling in the rate of a chemical reaction. Thus to have maximum quality food should be stored as cool as possible. In addition to cool temperatures, food should be stored in a clean, dark, and dry space. Ideally this space is in a basement insulated from any heat sources and with restricted light. When ideal conditions cannot be obtained, the time food is left in storage should be shortened. In other words—use it faster. Containers should be food grade. For example, garbage bags, cleaning containers, and kitty litter containers are unacceptable. You should be able to tightly seal all containers holding food to protect food against pest infestation and moisture. (For more information on shelf life and where to store food see sections "Shelf Life" and "Where To Store It.")

WHEN to start storing

Start now. Resource management is always beneficial and ever present. Wise storing of food and using food which has been stored will result in savings of time, money, and resources. Emergencies are never predictable. Therefore, to minimize financial burden, food storage should be built up over a period of time, a little at a time as quickly as possible. In order to insure that there is not waste, all items should be labeled and the oldest should be used first. In other words, rotate your food supply to maintain the highest quality possible.

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4. Types of Storage

Teaching Notes

I. **Definition:** The first step in discussing types of storage and how adequate the storage program is should be to understand what food storage is. Use **overhead "Definition."**

Food storage is: Any food "saved" to be eaten at a later time (4 hours, 4 days, or 4 years).

Too often we have the tendency to think food storage is wheat or a year's supply. In the United States we have refrigeration and cupboards making it unnecessary to shop for food daily as is necessary in some parts of the world. If we shop daily, it is our choice and planning. This means just about the entire population has some food storage—even if it is only enough food for one more meal. The object then becomes to analyze how much food is stored and how much of what foods will be needed to fulfill personal storage expectations.

> All available food should be considered as food storage, including food in the refrigerator, the freezer, the cupboard, the pantry, the garden, livestock, etc.

II. **Diversity:** "Don't place all your eggs in one basket." This old saying is a warning to the wise. If something happens to one basket, all the eggs are lost. But, if the individual has been wise and used other baskets, the loss is minimal. This principle also applies to food storage. Basically there are three types of storage—Emergency, Survival, and Provident Living. All are important and useful. Each fills different needs. Placing all one's effort in storing for one type of need may result in insufficient food or the inability to use storage at a time of need. Just as it is important to have storage for different needs, items should be stored by different methods to ensure some food and supplies are available regardless of the circumstances.

III. **Description:** Following is a brief description of each type of storage and its use.

A. Emergency—72 hour. Use **overhead "Types of Storage,"** p. 1 of 3.

1. Usually for very short term emergency of 1 to 3 days duration.
2. Stored food should allow immediate use.
3. This category should include life sustaining items:
   a. Water (minimum 1 gallon per person per day).
   b. Energy is the basic requirement—not nutritional value or variety.
4. Should be comprised of foods that require little or no preparation.
5. Store foods familiar and comforting to the individual and family.
6. Foods should be portable.

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7. Suggest rotating food items every 6 months—this is a good time to evaluate other items in the emergency preparedness pack such as clothing, medicines, etc. For more information on 72 hour emergency kits see **handout "72 Hour Home Emergency Kit."**

B. Survival—basic, or life sustaining storage. Use **overhead "Types of Storage,"** p. 2 of 3. This is the foundation of food storage. It is good to start with this type of storage when space and money are limited. Basic staples are usually less expensive to purchase than other food items and store fairly well for longer periods of time.

1. Store water first—1 gallon per person per day for at least 2 weeks. (See "Water Storage" section for more information.) Most of the items stored in this type of storage require adequate water to utilize.
2. One pound dry product per person per day. One pound dry product will provide about 1600 calories per day. Dry products include wheat, rice, beans, flour, dried fruits and vegetables, pasta, cereal, etc.) There will be little long lasting ill effects on health if nutritional variety is compromised for less than 3 months. If the stored food is intended to be eaten longer than 3 months, with little or no supplementation, storage should have greater variety of foods in order to balance nutrition.
3. Fulfills longer term needs than emergency.
4. Should include items which store well—"The Basics" which store well include wheat, sugar or honey, salt, dry milk, beans, rice, pasta, etc.
5. Suggest rotating every 2-5 years (food stored longer than 5 years is hoarding not storing). Even though these items usually store well, they will not last forever and should be used on a regular basis. Rotation will ensure fresh food; the taste of the food will be familiar and acceptable to the family; and cooking skills, habits, and attitudes will be in place in order to utilize the items stored.

C. Provident living storage—Use **overhead "Types of Storage,"** p. 3 of 3. When storage is done properly, provident living becomes a part of the two previous types of storage. It is wisely using all resources—time, money, food, energy, etc. When living providently, you will have or acquire the skills, knowledge, habits, and attitudes to use foods stored and the stored foods will be used. This is true preparedness. Provident living storage includes:

1. Variety of foods—foods should also be stored in a variety of methods. Don't place all your eggs in one basket. Types of storage include foods stored by different methods— frozen foods, dried foods, canned foods, fresh foods, etc.
2. Balanced nutritionally—wise use of the food pyramid as a guide in balancing basic food groups.
3. Foods used daily—foods are familiar to household and a part of daily menus.

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4. Includes basic storage items (wheat, sugar, beans, etc.).
5. Management of resources (balance time, money, energy, food, skills, etc.).
6. Skills and knowledge gained and maintained to provide self-sufficiency.
7. Suggest rotating every 1-5 years (food stored longer than 5 years and not rotated is hoarded not stored). Label and date all items stored.

IV. Use **overhead "Reasons to Store Food."** The main reason to store food should be to use it. Properly stored foods and rotated foods will provide:
   A. Management of resources (time, money, energy, skills, foods, etc.)—providing self sufficiency.
   B. Preparedness for time of need / want.

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Overhead "Definition"

Food Storage is:

<u>Any</u> food "saved" to be eaten later

(4 hours, 4 days, or 4 years,...)

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Types of Storage

** Emergency

72 hour
Water - first
Short term
Immediate emergency
Life sustaining
No preparation needed
Familiar - comforting
Portable
Suggest rotate every 6 mos

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** Survival

Basic, life sustaining
1 gal water/person/day
1 lb dry product/person/day
Fulfills long term need
Items should store well
Suggest rotate every 2-5 yrs

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** Provident Living

Variety of foods
Balanced nutritionally
Familiar foods
Includes basic storage items
Manages resources
Maintain/gain cooking skills
Suggest rotate every 1-5 yrs
Food stored in variety of ways

(Don't put all your eggs in one basket)

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Reasons To Store

Eat what is stored!

** Resource management

** Preparedness
for time of need

** Self reliance

** Ability to share with others

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Handout "72 Hour Home Emergency Kit"

The 72 Hour Home Emergency Kit

STATE OF UTAH
COMPREHENSIVE EMERGENCY MANAGEMENT
1110 STATE OFFICE
SALT LAKE CITY, UTAH 84114
(801) 538-3400

This Emergency Kit should meet the basic survival needs of your family for 72 hours. It is a generic tool that can be tailored to fit your particular needs. Most individuals and families prefer to store their emergency supplies in one location which would be relatively safe from earthquakes, yet easily accessible if evacuation is required. Items may be stored in a 32 gallon trash can, suitcase, footlocker or individual backpack as desired.

EMERGENCY NEEDS

- ☐ WATER STORAGE (1 GAL. PER PERSON PER DAY)
- ☐ INSTRUCTION MANUAL ON EMERGENCY PREPAREDNESS
- ☐ BATTERY-POWERED RADIO
- ☐ FIRST AID KIT & MANUAL
- ☐ SLEEPING BAGS & BLANKETS (WOOL & THERMAL)
- ☐ CAN OPENER
- ☐ WATERPROOF/WINDPROOF MATCHES
- ☐ NON-PERISHABLE FOOD
- ☐ FLASHLIGHT
- ☐ WATER PURIFICATION TABLETS
- ☐ UTILITY KNIFE
- ☐ EMERGENCY CANDLE
- ☐ EXTRA EYEGLASSES
- ☐ ESSENTIAL MEDICATIONS
- ☐ EXTRA CLOTHING

(Suggested items: ready-to-eat foods in unbreakable containers, canned meats, juice, fruits and vegetables, powdered milk, infant care foods, crackers, peanut butter, freeze-dried and dehydrated foods, meals ready-to eat "MRE.")

SANITATION KIT

- ☐ PLASTIC BUCKET w/TIGHTLY FITTED LID
- ☐ PLASTIC BAGS AND TIES
- ☐ DISINFECTANT (i.e. BLEACH or LYSOL)
- ☐ IMPROVISED TOILET SEAT
- ☐ PAPER CUPS & PLATES
- ☐ PERSONAL TOILETRIES
- ☐ TOILET PAPER
- ☐ TIN FOIL
- ☐ PAPER TOWELS
- ☐ PERSONAL HYGIENIC NEEDS
- ☐ PLASTIC UTENSILS
- ☐ SOAP

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STRESS FACTORS

- ☐ FOR CHILDREN: PUZZLES, CRAYONS, COLORING BOOKS, ETC.
- ☐ FOR ADULTS: BOOKS, MAGAZINES, GAMES, NEEDLE WORK, ETC.

OTHER EMERGENCY NEEDS

- ☐ PAPER & PEN
- ☐ COPIES OF INSURANCE POLICY & PERSONAL PAPERS
- ☐ MONEY—CASH—COINS
- ☐ ADDRESS AND PHONE NUMBER LISTS
- ☐ WORK GLOVES
- ☐ TOOLS AS DESIRED

HAVE ON HAND FOR IMMEDIATE USE

- ☐ FLASHLIGHT WITH SPARE BATTERIES. Keep a flashlight beside every bed in the house.
- ☐ PORTABLE RADIO WITH SPARE BATTERIES. Rumors will abound. Most telephones will be out of order, so your radio will be your best source of accurate information via the Emergency Broadcast System.
- ☐ FIRST AID KIT. Every American should know basic first aid. At the very least, each family member should know artificial respiration, CPR, the Heimlich maneuver, and first aid for severe bleeding and shock.
- ☐ SMOKE DETECTORS AND CLASS ABC FIRE EXTINGUISHERS are recommended for every home.
- ☐ PIPE WRENCH & ADJUSTABLE WRENCH for turning off gas and water mains.
- ☐ WORK GLOVES & HEAVY SHOES to assist with rescue work.

STANDARD FIRST AID KIT

First Aid Manual
Aspirin or Pain Relievers
Laxatives
Rubbing Alcohol
Diarrhea Medicine
Petroleum Jelly
Matches
Soap
Salt
Gauze
Triangular Bandage (36"x36"x52")
Bandaids
Elastic Bandage
Cotton Balls
Cotton Swabs
Safety Pins
Scissors
Thermometer
Sanitary Napkins (Pressure Dressing)
Disposable Diapers (Dressing/ Splint/Padding)
Micropore Adhesive, Paper Tape
Needles
Tweezers
Small Splints, Popsickle Sticks
Heavy String
Syrup of Ipecac
Individual Medical Needs
Baking Soda (½ tsp. soda + 1 tsp. salt + 1 qt. water for shock)

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CAR SURVIVAL KIT

- ALWAYS MAINTAIN AT LEAST ½ TANK OF GAS
- FIRST AID KIT & MANUAL
- CLASS ABC FIRE EXTINGUISHER
- RADIO & BATTERIES
- NON-PERISHABLE FOOD STORED IN METAL CAN
- BOTTLED WATER
- BAG OF SAND, SHOVEL, & TOOLS
- SUNDRY KIT (PAPER & PENCIL, MAPS, TISSUES, PRE-MOISTENED TOWELS, PLASTIC BAGS, ESSENTIAL MEDICATIONS)
- BLANKETS OR SLEEPING BAGS
- FLASHLIGHTS & BATTERIES
- REFLECTORS & FLARES
- WATERPROOF MATCHES & CANDLE
- JUMPER CABLES
- SHORT RUBBER HOSE FOR SIPHONING

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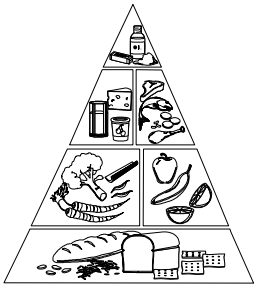
5. Current Storage: "How Much Food & Water Storage Do You Now Have?" Nutrition Inventory

Teaching Notes

How nutritionally balanced is the food you have stored and how much food and water do you have stored? This section will walk you through a five-step worksheet to assist you in analyzing your current storage, and determining how nutritionally balanced your storage is.

1. Use **overhead "Food Storage Pyramid."** The Food Storage Pyramid is an adaption of the USDA's Food Pyramid. It is the current visual presentation of what research has been saying for many, many years—eat a variety of foods and drink plenty of water. Each group contains some nutrients, but not all. No one food group is more important than another. Some foods are needed in larger quantities than other groups. The visual shape of the pyramid also helps individuals see which groups are needed in larger quantities.



2. Using the **handout "Food Storage Inventory"** evaluate your current storage according to household needs.

   Step #1: **Determine number of servings from each food group needed.** Use **overhead "Daily Requirements."** Different people need different amounts of food from each food group. The following chart outlines how many servings are needed in each food group based on the individual's gender and activity level. Look across the top of the chart and select the category that best describes your activity level and your sex. Follow that column down and note the number of servings for each group. If you fall between categories, split the difference between the number of servings for the two groups.

   NOTE: * Children, 8 years old and younger, have the same number of serving requirements, but a serving is half the size of an adult serving.

   Step #2: **Determine the total nutritional needs for the entire family according to servings per day.** Use **overhead "Daily Servings."** Nutritional needs will change as family members age or activity level changes. Update Nutritional Needs chart every 1-3 years, or as needed. Begin by dating the chart. List each family member by name in the left hand column. Add to the list any and all individuals you are responsible for (grandparents,

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parents, foster children, etc.). Figure the nutritional needs of each family member using Step 1 and record the number of servings each needs on the chart under the appropriate food group. Total the servings in each food group column and multiply by 365 days. This will give you the number of servings from each food group needed to feed your family for 1 year.

Step #3: **Inventory Food Storage.** Use **overhead "Servings per Group Inventory Sample."** Analyze your food storage according to the Food Groups. Each of the Food Groups is listed on a separate page of the handout. Examples of foods in each group are listed in the first column with the serving size in parentheses. The next column gives the Serving Size weight or volume for that example. Inventory your storage and record how much of each food you have on hand in the "Amount on Hand" column. If a food is a combination item, for example canned chili with tomato sauce, record it under the food group it most fits. The product has both a vegetable (tomato sauce) and a protein item (chili beans). The chili is primarily beans and thus falls under the protein group—canned beans and legumes. There may be items in your storage not listed on the handout. Add them to the list; use the extra page at the end of the handout, or use a blank sheet of paper.

The end of the handout is a page of weights and measures to assist with this process. Divide the amount on hand by the proper serving size, measure (either weight or volume) and record that number under the "Amount on Hand" (Servings column). If desired, make notes on age of the product to the far right. At the bottom of each table, add up total number of servings on hand for that food group. Subtract the number of servings needed for 1 year (Step 2). The result is an overview of your 1 year storage for that particular food group.

Continue with each group. This inventory will help to determine what areas your storage is lacking and examples of foods which could be added to "beef up" your program. To assist in planning additional storage see "How To Store What You Use" section 6.

Step #4: **The Other Group.** The tip of the food pyramid is made up of added fats, sugars, and salt. These foods should be eaten with wisdom and control. Often they are an ingredient in another dish (oil, sugar, salt, mayonnaise, etc.). These items, as well as other ingredient items used in cooking (baking powder, soda, etc.), are a part of food storage, but the amounts vary greatly according to the cooking habits and skills of the one preparing the food or the particular dish. For example, if canning fruit and using sugar in the process is a normal activity, that household would need significantly more sugar in storage than someone who does no home food

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preservation. Step 4 is to assess how much of these other items are needed. One easy way to determine how much of what is needed is to date the container when it is opened. When the container is empty figure the number of days needed to use the product. Divide the number of days into 365. The answer is the number of that size containers needed of that product. Some examples are on the worksheet.

Step #5: Evaluate the strengths and weaknesses of your storage. Set a goal and a plan to address these strengths and weaknesses. The following sections will assist in forming your personal plan:

A. "How To Store What You Use" and "Building Food Storage"
B. "Rotating Food Storage"
C. Using "Wheat," "Dried Milk," "Beans and Legumes," etc.

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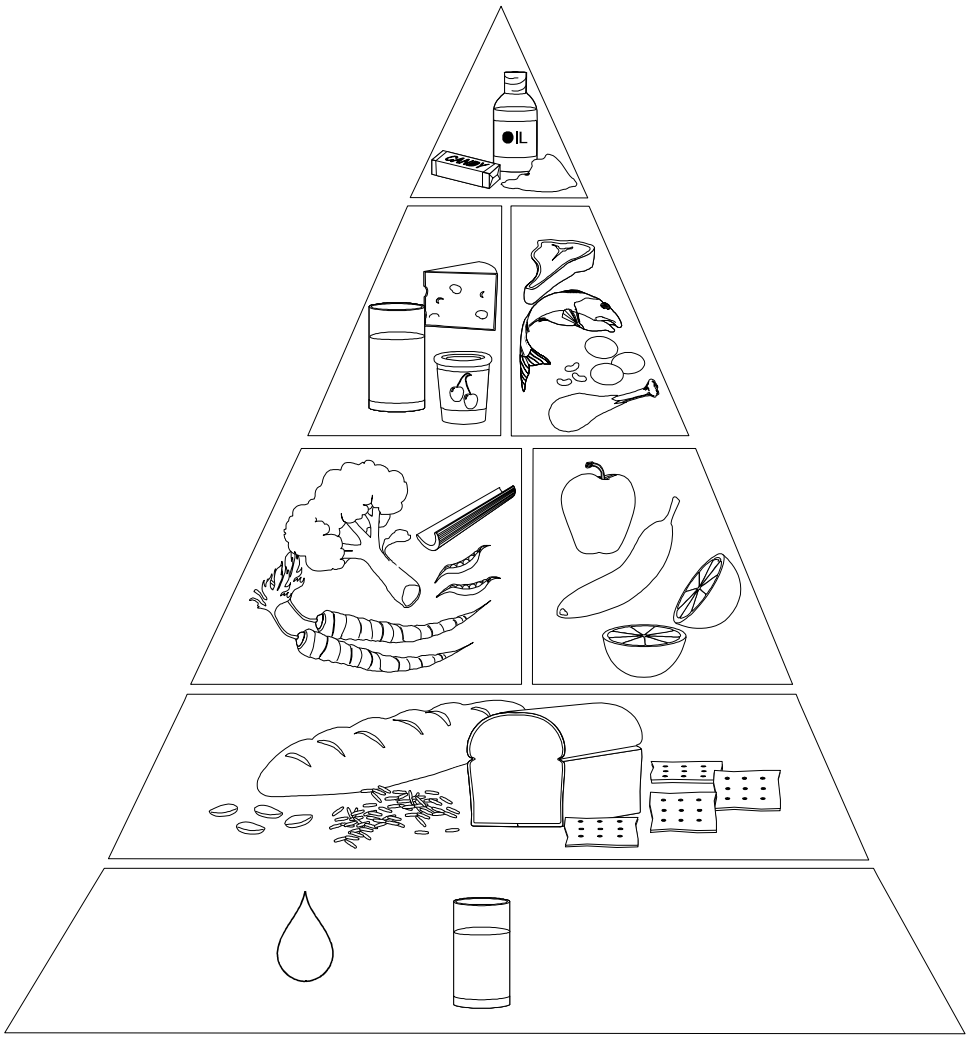
Overhead "Food Storage Pyramid"

Food and Water Storage Pyramid



* Water storage includes water for drinking and cooking. Actual amounts needed may vary depending upon physical exertion, humidity, salty foods consumed, etc.

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Overhead "Daily Servings"

Food & Water Storage Pyramid

Daily Servings

	Low	Moderate	High
	Sedentary Women *Some Older Adults*	*Most Children ** *Teen Girls* *Active Women* *Pregnant Women* *Nursing Women* *Sedentary Men*	*Teen Boys* *Many active Men* *Very Active Women*
	1,600 Calories	2,200 Calories	2,800 Calories
Water **	1 gallon	1 gallon	1 gallon
Grain 6-11	6	9	11
Vegetable 3-5	3	4	5
Fruit 2-4	2	3	4
Milk 2-3	2-3	2-3	2-3
Meat 2	2	2	2

* Children, 8 years old and younger, have the same number of serving requirements, but a serving is one half the size of an adult serving.

**Amount recommended for water includes drinking, cooking, and hygiene. The amount needed will change depending upon humidity, amount of dry or salty food consumed, etc. One gallon may not be sufficient in some locations.

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Overhead "Family Needs"

Family Nutritional Needs

Today's date:----------

		Servings					
Family Member	*Calorie Needs*	Water	Grain Group	Veg Group	Fruit Group	Milk Group	Meat Group
1							
2							
3							
4							
5							
6							
7							
8							
Total **"Daily"** Servings							
		x 14	x 365	x 365	x 365	x 365	x 365
Total **"Yearly"** Servings							

Overhead "Servings per Group Inventory Sample"

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Food and Water Inventory

Grain Group				
	Serving Size		**Amount on Hand**	
Food Item (and examples)	**Volume**	**Wt / Vol**	**Wt / Vol**	**Servings**
Wheat (½ cup cooked)	¼ c dry	1.5 oz dry		
Rice (½ cup cooked)	¼ c dry	1.6 oz dry		
Oatmeal (½ cup cooked)	¼ c dry	1.4 oz dry		
Cornmeal (½ cup cooked)	3 tablespoons	1 oz dry		
Flour	¼ cup	1 oz		
Mixes (cake, brownies, etc.)		1.4 oz		
Crackers		.5 oz		
Cookies		.5 oz		
Ready to Eat Cereal	¾ - 1 cup	1 oz		
Pasta, Noodles, Macaroni	½ c cooked	2 oz dry		
Breads	1 slice	1 oz		
		Total Servings Amount		
		Subtract Number Servings Needed for Household =		
		Current Year's supply (over / under)		

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Handout "Food Storage Inventory," p. 5-8 through 5-18

Food and Water Storage Nutrition Inventory

Based on Food Guide Pyramid and Daily Calories Needs

Any food storage program should first be life sustaining and then second, balanced nutritionally for health and personal taste. All food storage should be rotated and used. This worksheet is to help assess the nutritional balance and adequacy of one's food and water storage.

Food groups have long been a way to help consumers choose a diet which contained a variety of foods. Currently the Food Guide Pyramid is a visual presentation of basic food groups and the number of servings needed by the body for good health. Each group contains some nutrients, but not all. No one food group is more important than another. The Food Pyramid is also an excellent way to provide balance and variety in a food storage program. Using the Food Guide Pyramid follow each step below to assess your household needs and compare your needs to proven guides to nutritional adequacy.

Step #1. Determine Number of Servings Needed

Different people need different amounts of food from each food group. The following chart outlines how many servings are needed in each group based on individual's gender and activity level. Look across the top of the chart and select the category that best describes your activity level and gender. Follow that column down and note the number of servings for each group. If you fall between categories, split the difference between the number of servings for each group.

Daily Requirements

	Low	**Moderate**	**High**
	Sedentary Women *Some Older Adults*	*Most Children ** *Teen Girls* *Active Women* *Pregnant Women* *Nursing Women* *Sedentary Men*	*Teen Boys* *Many Active Men* *Very Active Women*
	1,600 Calories	2,200 Calories	2,800 Calories
Water **	1 gallon	1 gallon	1 gallon
Grain Group Servings 6-11	6	9	11
Vegetable Group Servings 3-5	3	4	5
Fruit Group Servings 2-4	2	3	4
Milk Group Servings 2-3	2-3	2-3	2-3
Meat Group (Protein) 2	2	2	2

* Children, 8 years old and younger, have the same number of serving requirements, but a serving is half the size of an adult's.
* Water amounts include water for drinking, cooking, and hygiene. Water storage is usually for 2 weeks. Water amounts will vary according to physical exertion, humidity, salty and dry foods consumed, etc. Amounts may need to be increased for different climates and physical activity.

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Step #2: Determine Nutrition Needs for Entire Family

Determine the nutritional needs of each family member using Step 1 and record on the chart below. Needs will change as family members age. Update Nutritional Needs every 1-3 years, or as needed. Begin by dating the list. List each family member and all individuals you are responsible for (grandparents, parents, foster children, etc.) Record the servings in each food group for that family member. Total the servings in each food group and multiply by 365 days. This is the number of servings from each food group needed to feed your family for 1 year.

Today's date:----------

		Servings					
Family Member	*Calorie Needs*	Water	Grain Group	Vegetable Group	Fruit Group	Milk Group	Meat Group
1							
2							
3							
4							
5							
6							
7							
8							
Total **"Daily"** Servings							
		x 14	x 365	x 365	x 365	x 365	x 365
Total **"Yearly"** Servings							

Step #3: Inventory Food & Water Storage

Analyze your food and water storage according the Food Storage Pyramid. Each of the Food Groups is listed on the following pages. Examples of foods in each group are listed in the first column with the serving size in parentheses. The next column gives the Serving Size weight or volume for that example. Inventory your storage and record how much of each food you have on hand in the "Amount on Hand" column (under Wt or Vol column). For help in determining the amount you have on hand see the weights and measures page at the end of the handout. Divide the amount on hand by the proper serving size measure (either weight or volume) and record the amount under the "Amount on Hand." If desired, make notes on age of the product to the far right. Add the total number of servings on hand for that food group. Subtract the number of servings needed for 1 year (Step 2). The result is an overview of your year's storage.

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Water				
	Serving Size		Amount on Hand	
Examples	**Volume**	**Wt / Vol**	**Wt / Vol**	**Servings**
Water Heater	1 gallon			
Bottles of Water	1 gallon			
Drum	1 gallon			
Fruit Juices * (may also be used as fruit)	1 gallon			
Soda Pop *				
Evaporated milk **				
Total Servings Amount				
Subtract Number Servings Needed for Household =				
Current 2 week's supply (over / under)				

One gallon water weighs approximately 8 pounds.

* These items will significantly increase calories consumed. It is not recommended all one's water storage be contained in these items. Water is the best source of water storage.

** Evaporated milk is concentrated. It should be diluted with equal water. Milk and fruit juice may also be used for milk servings or fruit servings.

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(Food items are only examples. Add additional food items to back side of page to reflect your storage.)

Grain Group					
	Serving Size		**Amount on Hand**		**Product Age**
Food Item (and examples)	**Volume**	**Wt / Vol**	**Wt / Vol**	**Servings**	
Wheat (½ cup cooked)	¼ c dry	1.5 oz dry			
Rice (½ cup cooked)	¼ c dry	1.6 oz dry			
Oatmeal (½ cup cooked)	¼ c dry	1.4 oz dry			
Cornmeal (½ cup cooked)	3 tablespoons	1 oz dry			
Flour	¼ cup	1 oz			
Mixes (cake, brownies, etc.)		1.4 oz			
Crackers		.5 oz			
Cookies		.5 oz			
Ready to Eat Cereal	¾ - 1 cup	1 oz			
Pasta, Noodles, Macaroni	½ c cooked	2 oz dry			
Breads	1 slice	1 oz			
Total Servings Amount					
Subtract Number Servings Needed for Household =					
Current Year's supply (over / under)					

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Vegetable Group

	Serving Size		Amount on Hand		Product Age
Food Item (and examples)	**Volume**	**Weight**	**Amount**	**Servings**	
Fresh or Raw Leafy	1 cup				
Fresh or Raw	1 medium				
Frozen	½ cup	4 oz			
Canned	½ cup	4 oz			
Dried *	¼ cup	1.5 oz			
Instant Potatoes (dry)	⅓ cup	.75 oz			
Juice (fluid)	¾ cup	6 oz			
Sauce (i.e., tomato)	½ cup				
		Total Amount			
			Subtract Number Servings Needed for Household =		
			Current Year's supply (over / under)		

* Water must be stored to reconstitute.

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Fruit Group					
	Serving Size		**Amount on Hand**		**Product Age**
Food Item (and examples)	**Volume**	**Weight**	**Amount**	**Servings**	
Fresh or Raw	1 medium				
Frozen	½ cup	4 oz			
Canned	½ cup	4 oz			
Dried Fruit	¼ cup	1.5 oz			
Juice Fluid	¾ cup	6 oz			
Juice Frozen (reconstitute) *	3 tablespoons	1.5 oz			
Juice Powdered *	3 tablespoons	1.1 oz			
		Total Amount			
		Subtract Number Servings Needed for Household =			
		Current Year's supply (over / under)			

*Water must be stored to reconstitute

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Milk Group					
	Serving Size		**Amount on Hand**		**Product Age**
Food Item (and examples)	**Volume**	**Weight**	**Amount**	**Servings**	
Fluid	1 cup	8 oz			
Evaporated (undiluted) *	1 ½ cup	4 oz			
Dry - regular (dry form) *	3 tablespoons	.8 oz			
Dry - instant (dry form) *	⅓ cup	.8 oz			
Yogurt	1 cup	8 oz			
Processed Cheese		2 oz			
Natural Cheese (cheddar, mozzarella, etc.)		1.5 oz			
Total Amount					
Subtract Number Servings Needed for Household =					
Current Year's supply (over / under)					

*Water must be stored to reconstitute.

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Meat Group					
	Serving Size		**Amount on Hand**		**Product Age**
Food Item (and examples)	**Volume**	**oz**	**Amount**	**Servings**	
Fresh or Frozen Meat (boneless)		3 oz			
Fresh/Frozen Meat (some bone)		3.75 oz			
Fresh/Frozen (a lot of bone)		6 oz			
Canned Meat		3 oz			
Dried Meat (jerky)					
Eggs - fresh or frozen	1 egg	1 oz			
Eggs - Powdered *	¼ cup				
Peanut Butter	2 tablespoons	1.1 oz			
Canned or cooked Dried Beans	½ cup	5 oz			
Dried Beans - dry form *	¼ cup	1.3 oz			
Split Peas - dry form *	¼ cup	1.3 oz			
		Total Amount			
		Subtract Number Servings Needed for Household =			
		Current Year's supply (over / under)			

*Water must be stored to reconstitute.

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Step #4: The Other Group, and Other Items

A set amount of fat, sugar, and salt has not been recommended here. Fat, sugar, salt and other ingredients add variety, flavor, and appeal to many dishes. These items are usually not consumed individually, but as a part of something else. Many of the foods found in the five main food groups contain fat, sugar, and salt. There may be enough in those foods to supply a year's need without separate storage, thus specific amounts have not been listed. The amount needed per household will vary depending upon cooking style. For example: home canning, bread making, baking, frying of foods, etc., will require additional amounts of these items to be stored. Following is a partial list, add items you use on a regular basis. The best way to determine the amount needed for a year's supply is to date the package as it is opened. Notice the date when the container is used. Divide the days it took to use the container into 365 days. This will tell you the number of containers (of that size) needed for a year's supply.

Food	Possible Uses	Amount Needed	Amount on Hand
Yeast	baking		
Salt	seasoning		
Sugar	baking, canning, cooking, etc		
Baking Powder	baking		
Butter	frying, baking		
Shortening	" "		
Oil	" "		
Baking Soda			
Mayonnaise, etc			
Jello			
Cornstarch			

Step #5: Evaluate and Set a Goal

After reviewing your inventory of food storage identify your household weaknesses and strengths. Are the foods stored being eaten and rotated? Are they foods you like and will eat? Are some foods too old? Do they have variety in color and texture? A year supply need not be a single item, but rather a variety of foods. The next step is to determine the types of foods needed in order to complete your storage. To build your storage to reflect what you actually eat, create a menu of foods eaten. This process is explained in detail in the "How to Store What You Use" section, and "How to Build Storage" section.

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Weights & Measures

Tips and Helps

Common Measurements

16	ounces	=	1 pound
3	teaspoons	=	1 tablespoon
4	tablespoons	=	1/4 cup
16	tablespoons	=	1 cup
2	cups	=	1 pint
2	pints	=	1 quart
4	cups	=	1 quart
4	quarts	=	1 gallon
1	liter	=	3.52 cups
1	gallon	=	4.55 liters

#10 dry pack cans <u>approximate</u> weight

beans (dried)	=	5.25 pounds	= 84 ounces
dry milk (non-instant)	=	4.13 pounds	= 66 ounces
flour	=	4.25 pounds	= 68 ounces
juice mix	=	6.31 pounds	= 101 ounces
macaroni / pasta	=	3.38 pounds	= 54 ounces
oats (quick)	=	2.75 pounds	= 44 ounces
oats (regular)	=	3 pounds	= 48 ounces
potatoes (instant)	=	3.19 pounds	= 51 ounces
rice	=	5.69 pounds	= 91 ounces
spaghetti	=	4.5 pounds	= 72 ounces
sugar	=	6.13 pounds	= 98 ounces
vegetables (dried)	=	2.5 pounds	= 40 ounces
wheat	=	5.8 pounds	= 93 ounces

Container Size and Approximate Food Weight

Container Size	Wheat, Beans, Rice, Sugar	Powdered Milk, Flour	Macaroni	Potato Flakes, Oatmeal, Instant Milk
1 gallon	7 pounds	5 pounds	4 pounds	3 pounds
2 gallons	15 pounds	10 pounds	8 pounds	6 pounds
4 gallons	30 pounds	20 pounds	15 pounds	13 pounds
5 gallons	35 pounds	25 pounds	20 pounds	15 pounds
6.5 gallons (50 lb can)	50 pounds	30 pounds	25 pounds	20 pounds
13 gallons (100 lb can)	100 pounds	60 pounds	50 pounds	40 pounds
30 gal drum	225 pounds	150 pounds	120 pounds	90 pounds
55 gal drum	400 pounds	275 pounds	225 pounds	160 pounds

Information shared by Teresa Hunsaker, USU Extension Home Economist, Weber County.

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Extra page, duplicate and use as needed.

	Serving Size		Amount on Hand		Product Age
Food Item	**Volume**	**Wt / Vol**	**Wt / Vol**	**Servings**	
Total Servings Amount					
Subtract Number Servings Needed for Household =					
Current Year's supply (over / under)					

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6. How to Store What You Use

Teaching Notes

1. If food is stored for use during time of emergencies or need, it should also be wisely used. Food storage is any food saved to be eaten at a later time— 4 hours, 4 days, or 4 years. Storage includes food in the refrigerator or freezer, vegetables in a garden or fruit on a tree, livestock, or food stored in a storage room. Management of this food is a vital part of food storage. Food is perishable even when stored properly under the most favorable circumstances and conditions. Food which is not a normal part of the diet will more likely not be used and more likely be wasted at a later date. Properly storing and rotating food will maximize nutritional quality, eating quality, and eliminate waste.

2. This section is an exercise in planning food storage based on **Provident Living Storage** (see **Types of Storage** section). It is intended to provide an easy way to analyze meal planning, food preparation and storage in the home in order to "store the foods **your** family eats and use the foods you store." The worksheet exercise is based on the idea that one should store the foods which are regularly eaten and are a part of the family eating patterns. Working through the steps will also give an overall view of eating habits including information of nutritional value of meals, shopping techniques and food preparation skills.

3. This plan assumes there is adequate space to store moderate amounts of food in various forms and is based on a year's planning time (see **Where to Store It** section for ideas on where to store food). This is not a perfect planner, but rather a tool to use in planning foods to "store what you use."

    a. Personalize it. The lists generated in this exercise should reflect your lifestyle, needs, preferences and circumstances. It will not work if it is the storage list of friends, relatives, or a list you feel others think you should have.
    b. Use this process to plan 80-90% of your year's storage needs. The remaining 10-20% may be made up of foods eaten less frequently such as at celebrations, holidays, special meals, etc.
    c. Re-do the process as family needs change, or every few years, to maintain accuracy. For example: children growing up, changing diet requirements, addition of family members, etc.
    d. The method usually does not take into account foods such as desserts and snacks, unless you plan them into the menu.

4. Use the handout **"Food Storage Planner"** as teaching notes. Walk through each step with participants. It may be wise to do Step 1 and allow participants time to complete before moving on to Step 2. Use **overhead "Sample Planner"** for illustration.

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Handout "Food Storage Planner"

Store What You Use

Worksheet Instructions

1. Step #1: Create a list of 10 to 20 meals.

a. Use the handout **"Food Storage Planner."** In the first column of the handout list the dishes frequently eaten, or create a list of favorite meals. Studies show families will eat the same main dishes about 80% of the time.

b. Begin the planning process by focusing on the main meal eaten during the day, for example, dinner or supper. The same process may be repeated for breakfast and lunch foods, as appropriate and if desired.

c. Brainstorm a list of 10 to 20 different dishes. The more meals you have on your list the greater the variety in your diet. At first you may not think of many foods. Post the list in a prominent place in your kitchen for two weeks. Each time you think of a new dish—write it on the list. Involve the family, ask for their ideas and suggestions. Make the list reflect what your family typically eats and enjoys.

2. Step #2: Evaluate the list.

a. Evaluate current diet pattern—is it storable? Is it realistic? Will the family eat it? Fast food and TV dinners are not ideal storage items. Elaborate and time-consuming meals may not be practical storage for the day-to-day life. Adjust your list of meals, as needed, to reflect practical meals.

b. Should the number of items that do not store well be reduced?

c. Could the items that do not store well be replaced by a similar dish made at home?

3. Step #3: Balance the dish to make a nutritional meal.

a. Go back over the list and add foods needed to make the meal balanced. See sample at the end of instructions or use teaching **overhead "Sample Planner"** For example, Tuna Noodle Casserole needs a vegetable. By adding peas to the list the meal has more variety and has better balance.

b. Write the additional foods after the main dish item.

c. Add foods, as needed, from the bread and cereal group, fruit group, vegetable

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group, milk and dairy group, meat group. Review the Food Guide Pyramid for suggestions.

4. **Step #4: Identify specific food items needed for each meal by reviewing the recipe(s) used to make the dishes**. In the example, Tuna Noodle Casserole may include tuna, noodles, cream soup, etc. Determine how much of each ingredient is needed.

    a. In the columns to the right of your list of dishes, identify major categories of ingredients used in your meals. For example, meats, soups, vegetables, fruits, bread and cereals, etc. Additional blank pages have been included as a part of the handout for your convenience. These pages may be duplicated on an 11x17 page or tape a couple of pages together to extend the space needed for this step.

    b. In the space underneath each category write the specific food items needed. For example, under meats you may have canned tuna, under soups you may have cream mushroom, under vegetables you may have frozen peas, etc.

    c. Continue down each column and write the amount of food needed for each dish on your list of meals.

    d. When completed with the steps above, add the amounts of food needed in each column and total at the bottom of the page. (See example at the end of instructions.)

5. **Step #5: Figuring amounts needed for the year.** Plan 80% of your meals with this process. The remainder of the year's meals and storage will include foods eaten less frequently, short term seasonal foods, special meals, holiday dinners, and long term basic storage items needed to sustain life such as beans, rice, wheat, etc.

    a. Eighty percent of 365 days is 292. Divide the total number of dishes or meals from Step 1 into 292. This is the number of times each year you are likely to prepare any one of these dishes. If the number of times you are scheduled to eat "stew," or some other dish not to your liking according to this method, adjust.

    b. Multiply each food totaled in the column in Step 4 by the answer above. This will give you the amount of that specific food item needed in your storage to supply about 80% of the year's need. These stored items will reflect the dishes you eat most often in your home, and you will more likely eat the foods you have stored.

Re-do the process as family needs change, or every few years, to maintain accuracy. For example, children growing up, changing diet requirements, addition of family members, addition of new favorite meals, etc.

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Sample

Food Storage Planner	Meat, Poultry, Fish				Vegetables			Cereals			Soups		
	Canned Tuna	Frozen Chicken	Ground Beef	Kidney Beans	Tomatoes	Broccoli	Peas	Noodles	Spaghetti	Oatmeal	Cr. Mushroom	Tomato	Chicken Noodle
Tuna Noodle Casserole, Peas	1 can						1 pk	2 c			1		
Spaghetti, Broccoli			1 lb		1 qt	1 pk			6 oz				

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Handout "Food Storage Planner"

Duplicate page as needed—tape following pages together to extend columns.

Food Storage Planner List of Foods										
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19 add pages if needed										
Total										
Divide total number of meals into 292 (see step 5) then multiply										
Amount Needed										

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Duplicate page as needed—tape to previous page to extend columns.

Overhead "Sample Planner: Balanced Meals"

Sample Planner

Food Storage Planner	Meat, Poultry, Fish				Vegetables				Cereals			Soups		
	Canned Tuna	Frozen Chicken	Ground Beef	Kidney Beans	Tomatoes	Broccoli	Peas		Noodles	Spaghetti	Oatmeal	Cr Mushroom	Tomato	Chicken Noodle
Tuna, Noodles, Peas	1cn						1 pk		2 c			1		
Spaghetti, Broccoli			1 lb		1 qt	1 pk				6 oz				
Chili			1lb	1lb	1 qt									
Stroganoff, Peas			1 lb				1pk		2 c			1		
TOTAL														
Divide														
Amt. Needed														

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7. Water Storage

Teaching Notes

Our abundant domestic water supply is generally of little concern. However, situations might occur when the supply of safe water is interrupted or becomes contaminated. Interruptions could be for only short periods of time, or natural disasters such as earthquakes could occur which would result in an inadequate or contaminated water supply for days. An emergency water supply is recommended in every household to meet these situations. (Use overhead **"Water Storage."**)

I. **AMOUNT OF WATER FOR STORAGE**

a. Only a short-term supply of water can be stored in most homes. One gallon per person per day for about 2 weeks time is a rule of thumb. Recommendations for the amount of water to be stored vary from ½ gallon to 1 gallon per person, for food preparation and drinking purposes only.

1. The Department of Defense, Office of Civil Defense, states that a quart of water or other fluid a day will sustain life, but humans would be much more comfortable, especially in warm weather, with an allowance of a gallon per day.
2. An additional ½ to 1 gallon per day is recommended for washing, teeth-brushing, and dishwashing.

b. The amount of water for consumption might be reduced somewhat, depending on the total juices, soups, other drinks, and high moisture foods which are available.

c. Water storage may need to be increased in humid locations or if individuals who may use the water will be involved in strenuous activity.

d. Other sources of water available in emergency situations are the water heater, water softener containers, and the water storage area of the toilet.

II. **CONTAINERS FOR WATER STORAGE**

Many types of containers are available for water storage. The most commonly used containers are glass, plastic, and metal.

a. **Glass:** Glass provides a fairly effective container for storage but is easily broken and heavier than plastic. Glass is non-permeable to vapors and gases; however, water in glass containers should not be stored near gasoline, kerosene, pesticides, or similar substances.

b. **Plastic:** Plastic jugs are frequently used for water storage. These containers are light weight and fairly sturdy. There are many types of plastic containers manufactured. Generally polyethylene type plastics are safe for storing water.

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They include pop bottles, commercial water storage bottles and bags.

1. Acceptable and safe plastic containers:
   a. Containers which have previously been used for food storage—pop bottles, fruit bottles, syrup bottles, etc. (must be thoroughly cleaned).
   b. Containers which are advertised as food storage products.
   c. Containers must have secure lids.

2. Plastic containers not recommended. Some plastic containers are not recommended for food storage because harmful chemicals could leach into the food, either the chemicals in the plastic or the chemicals the container previously held.
   a. Most plastics used in waterbeds are not approved food storage plastics, but perhaps the water could be used for bathing.
   b. Chlorine bleach bottles may be a food approved plastic, but contain an anti-static agent which prevents accumulation of dust during storage and are thus not recommended.
   c. Milk jugs are safe for water storage if they have been thoroughly washed; however, the seams may split and the jugs frequently leak over time.

3. Since plastic is permeable to certain vapors, water stored in plastic should not be kept near gasoline kerosene, pesticides, or similar substances.

4. It is advisable to store plastic water containers away from direct sunlight.

c. **Metal:** Some metals, such as stainless steel, can be successfully used for water storage. A metal water storage container should be resistant to rust. A metallic taste can be picked up by the stored water in some types of metal containers. Water stored in metal containers should not be treated with chlorine prior to storage because the chlorine compound is corrosive to most metals.

III. TREATMENT FOR STORED WATER

(Use overhead **"Treatment Methods."**) Water which is to be stored for long periods of time should be sanitized or disinfected. Be sure to use the best quality water possible for storage. Water from a system with a State Division of Health "approved" rating is recommended. **If the public water system is chlorinated, it is unnecessary to further treat the water for storage.** The containers should be clean. Pay special attention to the container lids. They should be sanitized to the same extent as the container. If treatment is necessary to sanitize and disinfect water for long term storage, follow one of methods below.

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Chlorine Treatment: Liquid chlorine bleach can be used to disinfect water for long-term storage. One gallon can be treated by the addition of ¼ teaspoon of liquid chlorine bleach containing 4 to 6 percent sodium hypochlorite. **(Most bleaches contain 5.25 percent.)** This is equivalent to 16 drops of liquid chlorine bleach. (Storing water in empty bleach bottles is not recommended.)

IV. EMERGENCY DISINFECTION OF WATER

(Use overhead **"Emergency Disinfection."**) Some emergency situations could occur if the only water which is available is contaminated by disease-causing organisms. In this case, the same procedures can be used as for treatment of stored water as follows:

a. Heat Treatment: Boiling is the most preferred method. This heat treatment requires water to be boiled in a vigorous rolling boil for **5 minutes**. Taste may be improved by pouring the boiled water back and forth from one clean container to another several times to incorporate air.

b. Chemical Treatment: Chemical treatment is less desirable than heat treatment because the effectiveness depends on several variables such as: (1) the amount of organic matter in the water, (2) the amount and type of chemical used, (3) water temperature, and (4) the length of time after the chemical is added until it is used.

1. Chlorine Treatment: Clear water can be treated with 1/4 teaspoon (16 drops) of liquid chlorine bleach per gallon. Mix the water and allow to stand for 30 minutes before using. If water is cloudy in appearance, chemical treatment is not recommended. A slight chlorine odor should be detectable in the water. If not, repeat treatment and let stand an additional 15 minutes before using. Use fresh bleach.

2. Water Purification Tablets: Different types of tablets are available for water purification purposes. Be sure to follow the manufacturer's directions for treatment and allow **sufficient** time for the chemical to work before using. Check the label for expiration date, since the tablets can become ineffective with time. Most tablets have a storage life of approximately 2-5 years unopened.

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3. Commercial Water Treatment Units: (Use overhead **"Commercial Units."**) Many extravagant claims are made by some water filter manufacturers concerning their ability to purify water. According to the Utah State Division of Health, concerning the effectiveness of their use, the following is quoted:

> "In the emergency situation, neither these nor any other presently known home-use device can be relied upon to produce safe drinking water from any or all contaminated waters. A home-use device which may reduce one aspect of water contamination may have no effect on a different type of hazard in the same water."

V. SHELF LIFE

Stored water should be checked occasionally, at least annually. If any changes, such as cloudiness or an odor, are noted replace the water and treat as before.

VI. CONTAMINATION BY RADIOACTIVITY & CHEMICALS

No effective way for decontamination of water which contains radioactive or chemical fallout is available for home use. This decontamination should be supervised by the local or the state health officers.

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Water Storage

Amount

1 gallon per person per day
for 2 weeks

Storage Containers

* Non-corrosive
* Non-absorbing
* Food grade
* Leak-proof
* Variety of containers

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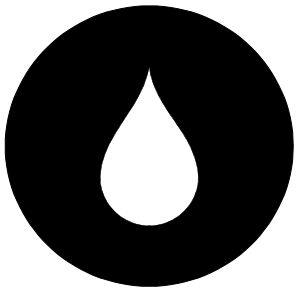
Treatment Methods

If the public water system is chlorinated, it is unnecessary to further treat water for storage.

Alternatives

Heat

Chlorine



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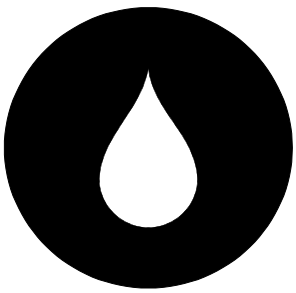
Emergency Disinfection

** Boil 5 minutes

** Chlorine Treatment

1/4 teaspoon chlorine bleach per gallon

** Water Purification Tablets



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Commercial Water Treatment Units

"In the emergency situation, neither these nor any other presently known home-use device can be relied upon to produce safe drinking water from any or all contaminated waters. A home-use device which may reduce one aspect of water contamination may have no effect on a different type of hazard in the same water."

Utah State Division of Health

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8. "How Old Is *TOOO* Old?"

Teaching Notes

Even with advanced methods of treating food to extend its shelf life—**food does not last forever**. There are inevitable changes that all nature (including food) must pass through. For food storage the questions then become "how old is too old" and "how do you tell if it is too old"? The following points help you determine whether to keep or to discard stored food.

I. **Safety of Stored Foods**

Safety of food should be and usually is the first consideration in shelf life. As food ages it naturally will change in flavor, odor, and texture. The worse these conditions are the less likely we will be to eat a particular food, but if it were safe to begin with, and it passes the following food safety test now, then it should be safe. Always a good rule of thumb to follow is "When in Doubt—Throw It Out." Refer to handout **"Shelf Life of Stored Foods,"** use overhead **"Safety Checklist."**

A. Was the food processed properly? If improper processing times, methods, and/or recipes were used for home canned vegetables and meats, the jar may be sealed, but the product deadly—DO NOT TASTE—discard.

B. Are there signs of spoilage? Look for the following signs of spoilage, if any are present—DO NOT TASTE—discard:

1. Bulging lid—lid must be a definite concave, and seal cannot be lifted with fingers.
2. Milky appearance to liquid—as food ages the liquid will become more cloudy and a residue will begin to form in bottom of jar. This is the food sluffing off, but the appearance should not be milky.
3. Mold growth of any kind.
4. Slimy appearance or texture.
5. Rancid odor—especially in foods which contain any amount of fat, like dehydrated meat, eggs, or protein products.
6. Corrosion on inside of can, especially along seam (this is a particular problem with canned foods older than 10 or more years).
7. Rust—especially on seam or seal of can.
8. Frozen can or bottle—freezing produces hairline fractures in seal and allows spoilage to begin. If a can of food were accidently frozen, keep it frozen until time to use. Once the can thaws, the food will begin to spoil, but dramatic evidence of spoilage may not be visible for a time. Just because spoilage cannot be seen, does not lessen the fact it is there and harmful.
9. Off-smell—food generally changes in odor as it ages, if the smell has developed to the point it is undesirable, discard.

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C. Was the food stored in a proper container? Containers are constructed from different chemicals. Some of these chemicals can leach out into food, if food comes in contact with them. If the containers were intended for food, but other non-food products were stored in them, chemicals from these products could also leach into the food. For this reason, **only food grade, moisture-proof, puncture proof, air-tight** containers are acceptable. Unacceptable containers for food storage include garbage cans, garbage bags, cleaning containers, kitty liter containers, etc. New galvanized garbage cans lined with a food-grade liner (it must say it is acceptable for food on the package) would be an acceptable way to store large quantities of grains and other foods.

II. Quality of Stored Foods

If the individuals intend to consume the food cannot get it past their noses and mouths the storage will be of no benefit to them. Quality becomes the second consideration of food storage. Quality is defined by texture, color, taste, and odor. As food ages, quality will continue to decrease making it more and more unacceptable. Texture will become softer, color will darken, taste will intensify in some foods (like honey) and decrease in others (like spices), and odor will change. Changing odor should not be confused with a spoiling odor. Sometimes the undesirable characteristics of old food may be camouflaged by the way the food is prepared—adding spices, pureeing, combining with another food, etc. See handout "Using Old Stored Food" for recipe ideas using old foods. Because quality deteriorates over time, it is important to select high quality food products for storage in the first place. If the food is unacceptable in quality now, discard it. Time will not improve it. To demonstrate the differences in the quality of stored foods use the **Demonstration "Quality of Stored Foods"** at the end of this section.

III. Nutritional Value of Stored Foods

Sugar is the only item stored that is almost purely one chemical compound (sucrose). All other foods are various blends of minerals, carbohydrates, proteins, lipids (or fats), vitamins, and water. Since nutrients in foods deplete at various rates, store (and eat) a variety of foods. When considering nutrient loss in a specific food item it is best to consider the primary nutrient(s) for which that food was stored in the first place.

A. ***Minerals*** and ***carbohydrates*** change very little in stored foods. While there are small changes, they are biologically insignificant. So in other words, if a food is stored primarily for its mineral and carbohydrate content, nutrition will be little affected by age and adverse storage conditions.

B. ***Proteins*** change in the way they react in a recipe. For example, old wheat flour will not rise when used in bread because the ability of the proteins to form gluten has been destroyed.

C. ***Fats*** undergo enzymatic changes, or oxidize (become rancid) creating off odors and flavors. The higher the fat content the shorter the shelf life.

D. ***Vitamins*** are susceptible to destruction by heat, light, and oxidation. Some foods have high levels of particular vitamins and can still provide the needed daily supply even after loss due to age. For example, tomatoes stored 4 years lose 10%-

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20% of their vitamins A and C. However, tomatoes contain so much more of both of these vitamins that even when stored for several years, they still have much higher vitamin content than other foods (such as fresh applesauce). A good rule of thumb is to eat a variety of foods.

IV. **Storage Conditions**

A. Storage conditions for canned or dehydrated foods should be **cool, dark,** and **dry**. (Use overhead **"Dry Conditions."**) Shelf life of food is dependent on storage temperatures, light, and humidity. The warmer the temperature, the brighter the room, and the more humid the room the shorter the shelf life—in quality, safety, and nutrition (see above). The Quartermaster Corps of the United States military have established a storage life of 48 months for most dehydrated foods stored at 70º F. Temperatures above 70º F will shorten shelf life. For example, non-fat dry milk shelf life is 18 months to 2 years, but when stored at 90º F the odor of the milk will be dramatically affected and may shorten the life to as low as 3 months.

1. Cool—ideal temperature is 50º F (range between 50º - 70º F).
2. Dark.
3. Dry—between 50-60% humidity. Keep foods off cement floors and away from outside walls to prevent condensation.

B. Storage conditions for frozen foods should be as cold as possible (0 degrees or lower is ideal) and frost free (use overhead **"Frozen Conditions"**).

1. Frost free freezers are great to cut back defrosting work, but they also compromise the quality of the food stored. The principle behind frost free is a melting and evaporating in order to rid the freezer of undesirable frost build up. (If the frost is being eliminated then the moisture from the food is also being eliminated.)
2. Freeze foods in airtight moisture proof containers.
3. The lower the temperature (ideal is 0 degrees), the harder the freeze, the slower the deterioration of the food. Freezing does not preserve food indefinitely, it just slows down the deterioration process.
4. Most frozen foods should be used within 6 months to 1 year for optimum quality. The longer the food is frozen the more likely it will freezer burn and absorb flavors and odors.

V. **Discarding Old Food**

If <u>safety</u> is questionable, place food in a closed container and discard in garbage cans away from pets, animals, and children. If safety is not in question, but quality and nutrition is undesirable, discard in the following manner:

A. Compost pit.
B. Spread on garden to compost.
C. Feed to livestock (small or large).
D. Discard at public landfill.
E. <u>If safety of the food is not in question</u>, consider donating unwanted but desirable food to food banks or pantries.

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VI. **Using Old Food**

Food which is safe and the quality still high enough to be desirable to someone (not everyone has the same taste buds and preferences) try the following solutions (see handout **"Using Old Stored Food"**):

A. Fruit leather—puree, season to taste, spread thinly on plastic wrap lined drying trays and dry.

B. Use in baked goods. Puree and use as an added ingredient in the recipe, or puree may replace part of the fat/oil called for in the recipe (see recipes).

C. Make a smoothie by pureeing fruit, mixing yogurt, ice cream, etc, and season to taste. Makes a nice breakfast replacement.

D. Use smaller amounts. If the taste is strong try using the food item as a secondary ingredient in other dishes (small amounts are not as easily detected as when the food is used as the primary ingredient). For example, the taste of old dry milk made into a smoothie may be detected by discriminating taste buds, but the taste of old dry milk used in a pancake mix may be unnoticed.

VII. **How Old Is Too Old?**

In conclusion, the shelf life depends on three things: safety, quality, and nutrition. Once safety has been determined, the food must be desirable enough to be consumed.

A. Food stored longer than 5 years may be hoarding—not storing.

B. Most dry or canned food stores fairly well for 2 years.

C. Most dry or canned storage guidelines indicate storage time for optimum quality.

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Overhead "Safety Checklist"

Food Storage Safety Check ✔ List

✔Properly Processed
✔No Bulging Lid
✔Not Milky
✔No Mold Growth
✔Not Slimy
✔Not Rancid
✔No Corrosion
✔No Rust
✔Never Frozen
✔No Off Odor
✔In Proper Container

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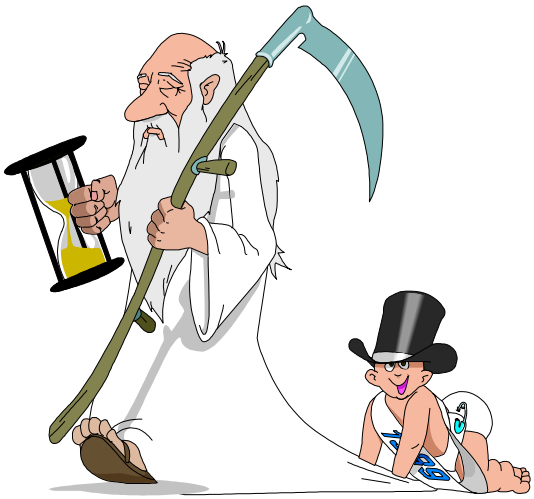
As food ages, it changes...

Texture

Color

Flavor

Odor



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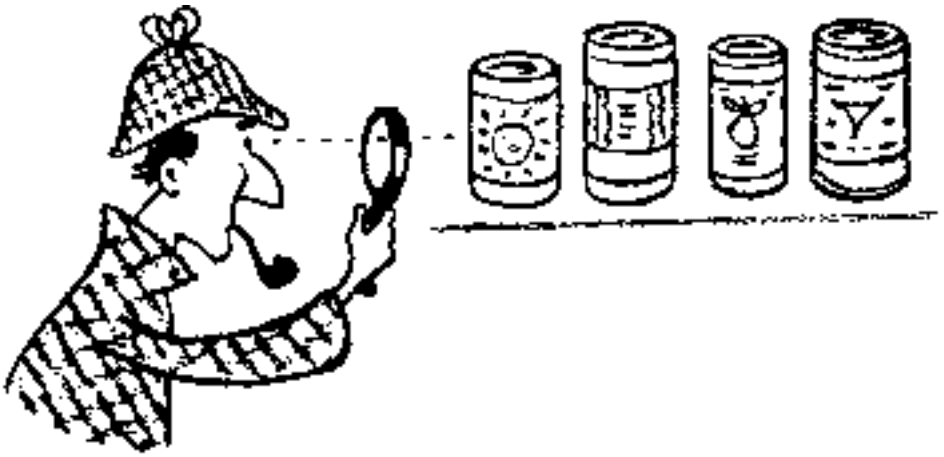
Minerals & Carbo. *little change*

Proteins. *recipe function change*

Fats . . . . . *rancid, odor, taste*

Vitamins . . . . . *susceptible*



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Optimum Canned & Dry Storage Conditions

Food may be stored at less than optimum conditions, but it must be used sooner.

Cool

between 50º - 70º F

Dry

circulating air
between 50-70% humidity

Dark

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Optimum Freezer Storage Conditions

Food may be stored at less than optimum conditions, but it must be used sooner.

Cold

0º F or lower

Not Frost Free

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Shelf Life of Stored Foods

Shelf Life

How long is "a reasonable time?" Food storage shelf life questions frequently asked are, is the food is still good? "Good" and "reasonable time" can be addressed in three ways: Safety, nutritional value, and quality.

Safety: As food ages it naturally will change in flavor, odor, and texture. The worse these conditions are the less likely we will be to eat a particular food, but if it were safe to begin with, and it passes the following food safety test now, then it should be safe. A good rule of thumb is "When in Doubt—Throw It Out." The following chart gives throw away guidelines.

1. Food was not processed properly.
   If improper processing times, methods, and/or recipes were used for home canned vegetables and meats, the jar may be sealed, but the product deadly—DO NOT TASTE—discard.
2. Look for the following signs of spoilage—DO NOT TASTE—discard:
   a. Bulging lid—lid must be definite concave, and seal cannot be lifted with fingers.
   b. Milky appearance to liquid—as food ages the liquid will become more cloudy and a residue will begin to form in bottom of jar—this is the food sluffing off, but the appearance should not be milky.
   c. Mold growth of any kind.
   d. Slimy appearance or texture.
   e. Rancid odor—especially in foods which contain any amount of fat, like dehydrated protein.
   f. Corrosion on inside of can, especially along seam (particular problem with canned foods older than 10 years or so.
   g. Rust—especially on seam or seal of can.
   h. Frozen can or bottle—freezing produces hairline fractures in seal and allows spoilage to begin.
   i. Off-smell—food generally changes in odor as it ages, if the smell has developed to the point it is undesirable.
   j. Food stored in non-food grade container—the container was not meant for food or once contained a non-food product (garbage bags, garbage cans, cleaning bottles or buckets, kitty liter containers, etc.).

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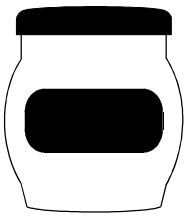
Quality is defined by texture, color, taste, and odor. As food ages the quality will continue to decrease making it more and more unacceptable. Texture will become softer, color will darken, taste will intensify in some foods (like honey) and decrease in others (like spices), and odor will change. Changing odor should not be confused with a spoiling odor. Sometimes the undesirable characteristics of old food may be camouflaged by the way the food is prepared—adding spices, pureeing, combining with another food, etc. See recipes for using old foods. Because quality deteriorates over time, it is important to select high quality food products for storage in the first place. If the food is unacceptable in quality now, discard it—time will not improve it. Look for plump intact kernels of storage grains, brightly colored dehydrated foods, textures of all foods.

Nutrition: Sugar is the only item stored that is almost purely one chemical compound (sucrose). All other foods are various blends of minerals, carbohydrates, proteins, lipids (or fats), vitamins, and water. When considering nutrient loss in food storage it is best to consider the primary nutrient(s) the food was stored for in the first place. ***Minerals*** and ***carbohydrates*** change very little in stored foods. While there are small changes, they are biologically insignificant. So in other words, if a food is stored primarily for its mineral and carbohydrate content, nutrition will be little affected by age and adverse storage conditions. ***Proteins*** change in the way they react in a recipe. For example, old wheat flour will not rise when used in bread because the ability of the proteins to form gluten has been destroyed. ***Fats*** undergo enzymatic changes, or oxide (become rancid) creating off odors and flavors. The higher the fat content the shorter the shelf life. ***Vitamins***, on the other hand, are susceptible to destruction by heat, light, and oxidation. Some foods have high levels of particular vitamins and can still provide the needed daily supply even after loss due to age. For example, tomatoes stored 4 years lose 10%-20% of their vitamins A and C. However tomatoes contain so much more of both of these vitamins that even when stored for several years they still have much higher vitamin content than other foods (such as fresh applesauce). A good rule of thumb is eat a variety of foods.

Storage Conditions

Storage conditions should be **cool, dry,** and **dark**. Shelf life of food is dependent on storage temperatures, light, and humidity. The warmer the temperature, the brighter the room, and the more humid the room the shorter the shelf life—in quality, safety, and nutrition (see above). The Quartermaster Corps of the United States military has established a storage life of 48 months for most dehydrated foods stored at 70º F. Temperatures above 70º F will shorten shelf life. For example, non-fat dry milk shelf life is 18 months to 2 years, but when stored at 90º F the odor of the milk will be dramatically affected and may shorten the life to as low as 3 months.



Storage Containers

Containers are constructed from different chemicals. Some of these chemicals can leach out into food, if food is stored in it. If the containers were intended for food, but other non-food products were stored in them, these chemicals could

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also leach into the food. For this reason use **only food grade, moisture-proof, puncture proof, air-tight** containers. Unacceptable containers for storage include garbage cans, garbage bags, cleaning containers, kitty liter containers, etc. New galvanized garbage cans lined with a food-grade liner (it must say it is acceptable for food on the package) would be an acceptable way for storing large quantities of grains and other foods. Be cautious when using containers which are food grade, and once held food—but the food had a strong odor or flavor. For example: empty pickle bottles collected from food service establishments (restaurants, schools, etc.) are acceptable storage containers, **but** they may make the food stored in them smell and taste like pickles.

Shelf Life Times

Actual shelf life is based on safety, quality, and nutrition. The shelf life of most canned and dried foods is approximately 2 years. Food stored longer than 5 years is hoarding not storing. The following charts give specific foods, storage conditions, and average temperatures for optimum shelf life.

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VEGETABLES AND FRUITS

Food Component	Storage Condition	Average Storage Temperature	Storage Area	Optimum Length of Storage
Fresh potato	ventilated boxes or bags	35 - 40°F.	moderately moist pit or cellar	6 months
Fresh sweet potato	ventilated boxes or bags	55 - 60°F.	dry basement	6 months
Canned potato	original container	70°F.	dry basement	30 months
Canned sweet potato	original container	70°F.	dry basement	30 months
Frozen potato	original package	0°F.	freezer	8 months
Dehydrated potato	original container	70°F.	dry basement	30 months
Potato chips	original container	70°F.	basement	1 month
Fresh dark green vegetables	flexible package	38 - 40°F.	refrigerator	7 days
Onions fresh dry	net bag	32°F.	cool dry area	6 months
Carrots fresh	ventilated boxes or bags	32°F.	moist pit or cellar	6 months
Pumpkin fresh	ventilated box	55°F.	moderately dry basement	6 months
Squash (winter) fresh	ventilated box	55°F.	moderately dry basement	6 months
Tomatoes fresh ripe	flexible package	38 - 40°F.	refrigerator	2 weeks
Tomatoes green mature	flexible package	55 - 70°F.	moderately dry basement	4 - 6 weeks
Cabbage fresh	ventilated box	32°F.	moderately moist pit or cellar	6 months
Other fresh vegetables	flexible package	38 - 40°F.	refrigerator	1 - 2 weeks
Beets fresh	ventilated box	32°F.	moist pit or cellar	6 months
Canned vegetables	original container	70°F.	dry basement	24 months
Frozen vegetables	original container	0°F.	freezer	12 months
Dehydrated vegetables	air & moisture-proof cont.	70°F.	dry basement	8 months
Fresh citrus fruits	ventilated container	32°F.	moderately moist cellar	8 weeks
Bananas fresh	ventilated container	60 - 70°F.	basement	1 week
Berries fresh	ventilated container	38 - 40°F.	refrigerator	1 - 2 weeks
Pears fresh	ventilated container	32°F.	moderately moist cellar	4 months

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Food Component	Storage Condition	Average Storage Temperature	Storage Area	Optimum Length of Storage
Apples fresh	separated in boxes	32°F.	moderately moist cellar	6 months
Canned fruits	original container	70°F.	dry basement	24 months
Frozen fruits	original container	0°F.	freezer	12 months
Dehydrated fruits	air and moisture-proof cont.	70°F.	dry basement	8 months
Canned fruit juices	original container	70°F.	dry basement	24 months
Frozen fruit juices	original container	0°F.	freezer	12 months
Dehydrated fruit juices	air & moisture-proof cont.	70°F.	dry basement	12 months
Canned vegetable juice	original container	70°F.	dry basement	12 months
Canned tomato condiments	original container	70°F.	dry basement	24 months
Jams and jellies	original container	70°F.	dry basement	18 months
Pickles	original container	70°F.	dry basement	12 months

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BREAD, CEREAL, RICE AND PASTA

Food Component	Storage Condition	Average Storage Temperature	Storage Area	Optimum Length of Storage
Flour (whole wheat graham)	10 - 12% moisture sealed cont.	70°F.	basement	2 weeks
Flour (white enriched)	10 - 12% moisture sealed cont.	70°F.	basement	1 year
Prepared flour mixes (pancake, muffin, cake)	original container	70°F.	basement	8 months
Hot breakfast cereals (wheat and oat)	original container	70°F.	basement	6 months
Cold breakfast cereals (corn, oat, wheat, rice)	original container	70°F.	basement	1 year
Rice, dried (white enriched)	10 - 12% moisture sealed cont.	70°F.	basement	2 years
Cornmeal	original container	70°F.	basement	1 year
Pasta, dried	10 - 12% moisture sealed cont.	70°F.	basement	2 years
Popcorn, unpopped	original container (can)	70°F.	basement	3 years
Popcorn, unpopped	original container (bag)	70°F.	basement	3 months
Bread fresh purchased	original container	70°F.	basement	5 days
Bread frozen purchased	original container	0°F.	freezer	6 months
Bread made from whole wheat (ground fresh)	polyethylene bags	70°F.	basement	3 days
Bread made from white flour	polyethylene bags	70°F.	basement	5 days
Raw batters and doughs frozen	original container	0°F.	freezer	3 months
Pretzels, crackers, cereal snacks	original container	70°F.	basement	3 months
Other bakery products (fresh rolls, cakes and cookies purchased)	polyethylene bags or cartons	70°F.	kitchen	4 days
Other bakery products (frozen rolls, cakes and cookies)	polyethylene bags or cartons	0°F.	freezer	6 months
Raw whole wheat	10 - 12% moisture sealed cont.	70°F.	basement	25 years

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MEAT, POULTRY, FISH AND LEGUMES

Food Component	Storage Condition	Average Storage Temperature	Storage Area	Optimum Length of Storage
Beef fresh	original package	38 - 40°F.	refrigerator	4 days
Beef ground	original package	38 - 40°F.	refrigerator	1-2 days
Beef frozen	air and moisture-proof container	0°F.	freezer	10 months
Beef corned	original package	38 - 40°F.	refrigerator	2 weeks
Beef chipped	vacuum package	38 - 40°F.	refrigerator	28 - 42 days
Beef dried	restructured and dried in a can	70°F.	cool basement	18 months
Beef canned (in chunks with natural juices)	original package	70°F.	cool basement	30 months
Pork frozen	air and moisture-proof container	0°F.	freezer	4 - 6 months
Pork fresh	original package	38 - 40°F.	refrigerator	4 days
Pork cured	vacuum package	38 - 40°F.	refrigerator	4 weeks
Pork sausage	original package	38 - 40°F.	refrigerator	4 days
Veal fresh	original package	38 - 40°F.	refrigerator	4 days
Veal frozen	air and moisture-proof container	0°F.	freezer	8 months
Lamb fresh	original package	38 - 40°F.	refrigerator	4 days
Lamb frozen	air and moisture-proof container	0°F.	freezer	8 months
Variety meats fresh	original package	38 - 40°F.	refrigerator	2 days
Variety meats frozen	air and moisture-proof container	0°F.	freezer	4 months
Frankfurters	vacuum package	38 - 40°F.	refrigerator	3 weeks
Processed lunch meats	vacuum package	38 - 40°F.	refrigerator	4 weeks
Chicken and turkey fresh	original package	38 - 40°F.	refrigerator	5 days
Chicken and turkey frozen	air and moisture-proof container	0°F.	freezer	8 months
Fish frozen (varies with species)	original package	0°F.	freezer	3 - 9 months
Fish smoked	vacuum package	38 - 40°F.	refrigerator	4 weeks

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Food Component	Storage Condition	Average Storage Temperature	Storage Area	Optimum Length of Storage
Fish canned	original package	70°F.	cool basement	18 months
Fish shellfish frozen	original package	0°F.	freezer	3 months
Eggs fresh	original package	38 - 40°F.	refrigerator	4 weeks
Eggs dried	original package	70°F.	cool basement	36 months
Egg substitutes	original package	0°F.	freezer	3 months
Nuts	original package	70°F.	cool/dry basement	12 months
Beans dry	rigid plastic or metal container	70°F.	cool/dry basement	12 months
Peas and lentils	rigid plastic or metal container	70°F.	cool/dry basement	12 months

FATS AND OILS

Food Component	Storage Condition	Average Storage Temperature	Storage Area	Optimum Length of Storage
Solid shortening	original container	70°F.	cool/dry	9-12 months
Oil	original container	70°F.	cool/dry	6-9 months
Margarine	original container	40°F.	refrigerator	6-9 months
Butter	original container	40°F.	refrigerator	6-9 months

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DAIRY PRODUCTS

Food Component	Storage Condition	Average Storage Temperature	Storage Area	Optimum Length of Storage
Fresh fluid milk whole	original container	38 - 40°F.	refrigerator	14 days
Fresh fluid milk 2%	original container	38 - 40°F.	refrigerator	14 days
Fresh fluid milk skim	original container	38 - 40°F.	refrigerator	14 days
Fresh fluid buttermilk	original container	38 - 40°F.	refrigerator	14 days
Fresh fluid milk chocolate	original container	38 - 40°F.	refrigerator	14 days
Canned evaporated milk	can inverted at 2 month intervals	60 - 70°F.	basement	12 months
Canned condensed milk	can inverted at 2 month intervals	60 - 70°F.	basement	12 months
Dry milk products	original container	60 - 70°F.	basement	24 months
Cream light	original container	38 - 40°F.	refrigerator	14 days
Cream heavy	original container	38 - 40°F.	refrigerator	14 days
Cream half and half	original container	38 - 40°F.	refrigerator	14 days
Cream substitutes	original container	60 - 70°F. or frozen	basement or freezer	24 months
Cream sour	original container	38 - 40°F.	refrigerator	14 days
Yogurt	original container	38 - 40°F.	refrigerator	14 days
Ice cream	air and moisture-proof container	0°F.	freezer	30 days
Ice milk	air and moisture-proof container	0°F.	freezer	30 days
Sherbet	air and moisture-proof container	0°F.	freezer	30 days
Natural American cheeses	vacuum package	38 - 40°F.	refrigerator	6 months
Processed American cheeses	vacuum package	38 - 40°F.	refrigerator	8 months
Swiss cheese	vacuum package	38 - 40°F.	refrigerator	6 months
Cottage cheese creamed	original container	38 - 40°F.	refrigerator	14 days
Cream cheese	original container	38 - 40°F.	refrigerator	21 days
Dry cheeses	original container	60 - 70°F.	basement	3 months
Cheese spreads, dips, etc.	original container	38 - 40°F.	refrigerator	21 days

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Handout "Using Old Storage"

Using Old Stored Food

Before using old storage, determine the safety of the food. When in doubt, throw it out. Do not taste any food which may be unsafe.

1. Food was not processed properly.
   If improper processing times, methods, and/or recipes were used for home canned vegetables and meats, the jar may be sealed, but the product deadly—DO NOT TASTE—discard. Use only **scientifically approved** recipes for home canning.
2. Look for the following signs of spoilage—DO NOT TASTE—discard:
   a. Bulging lid—lid must be definitely concave; seal cannot be lifted with fingers.
   b. Milky appearance to liquid—as food ages the liquid will become more cloudy and a residue will begin to form in bottom of jar—this is the food sluffing off, but the appearance should not be milky.
   c. Mold growth of any kind .
   d. Slimy appearance or texture.
   e. Rancid odor—especially in foods which contain any amount of fat, like dehydrated protein.
   f. Corrosion on inside of can, especially along seam (particular problem with canned foods older than 10 years or more.
   g. Rust—especially on seam or seal of can.
   h. Frozen can or bottle— freezing produces hairline fractures in seal and allows spoilage to begin.
   I. Off-smell—food generally changes in odor as it ages, if the smell has developed to the point it is undesirable, discard.
   j. Food stored in non-food grade container— the container was not meant for food or once contained a non-food product (garbage bags, garbage cans, cleaning bottles or buckets, kitty liter, etc.).

Discarding Old Food

If safety is not in question but quality and nutrition are undesirable, discard by placing in compost pit, spread over garden, feed to livestock, or discard in the landfill. If the quality is such that you will not to eat it—do not give to food banks, it will not be any more acceptable to them. But, if the food is desirable to eat and safe, food banks are always in need of donated food. If food safety is questionable, discard in a closed container then inside trash container. Do not feed to pets.

Using "Acceptable" Older Food

The longer food is stored the more the flavor, texture, color, and odor will change. If the food is safe (use the check list above), then the following may be used to create tasty dishes. Coverup strong flavor with spices, herbs, or other flavorings (cinnamon, nutmeg, cloves, Italian seasoning, creole seasoning, etc.—the stronger the flavoring the greater the coverup). Hide softening texture by pureeing, or mixing with other foods. Color will not be as noticeable if added to other foods.

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Recipe Ideas

Old Fruit Cake

This cake is an old-passed-around-favorite for using old storage fruit. Caution, it is rich, and so should not be used as a frequent means of using stored fruit. If old fruit is not available, canned fruit of any age, or fruit cocktail, works well. Cake texture is more like a pudding cake, rather than a light and fluffy cake. There are many versions of the standard recipe. Try adapting your own to suit your needs and nutrition. Serves 16-20

1	quart fruit, with juice
1 ½	cups sugar
1	cup oil
4	cups flour
4	teaspoons baking soda
1	teaspoon salt
1	teaspoon cloves
1	teaspoon nutmeg
1	tablespoon cinnamon
1	cup raisins, nuts or coconut (optional)

Blend fruit with juice in food processor or blender (or use a potato masher—it need not be a fine puree). Add sugar and oil to fruit and mix well. Add remaining ingredients and mix. Pour batter in a non-stick 9x13 baking pan. Bake at 350 degrees for 1 hour. Cake is rich and can be eaten plain, but if frosting is desired, a butter cream or cream cheese frosting is nice.

Amount Per Serving
Calories 372 Calories from Fat 128
Percent Total Calories From:
Fat 35% Protein 4% Carb. 61%

Nutrient	Amount per Serving		% Daily Value
Total Fat	14	g	22%
Saturated Fat	1	g	5%
Cholesterol	0	mg	0%
Sodium	353	mg	15%
Total Carbohydrate	57	g	19%
Dietary Fiber	1	g	4%
Protein	4	g	

Vitamin A 0% Vitamin C 4% Iron 5%

Fruit Smoothies

Nice way to use older bottled fruit. Makes about 3-4 servings.

2	cups bottled fruit, drained
1	cup yogurt
1	banana (optional)

Combine all ingredients in blender and blend until smooth. The banana will help thicken the smoothie.

Pureed Fat Replacement

Older fruit may be pureed and used in place of part of the fat in baked goods. The fruit will help provide moisture to the recipe, but since pureed fruit does not melt, it will not act the same way as fat in baking, and the final product will be changed. Do not replace all fat with pureed fruit. Begin by replacing ¼ to ½ and test the quality of the product. A good rule of thumb is to maintain at least 1 tablespoon of fat per cup of flour used in the recipe. The rest of the original fat in the recipe may be substituted with fruit. Since fruit is sweet and moist the final baking time may need to be increased to compensate for extra moisture.

Fruit Leather

A favorite way to use old fruit is in fruit leather. The same principle applies whether the fruit is new or old. Drain juice from fruit (reserve to use later, if needed). Puree fruit, adding additional juice back to the fruit, as needed, to create the consistency of thick applesauce.

Add sweetening to taste (frequently the syrup on the fruit is sufficient sweetening). Spices may also be added for additional flavor. Be careful with sweetening and spices, they both concentrate when dried. Spread thinly on dryer

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racks which have been lined with plastic wrap and dry according to dryer instructions.

Christmas Leather

2	quarts bottled applesauce
6	ounces frozen cranberry juice concentrate
3-4	tablespoons sunflower seeds or chopped nuts (optional)

Combine applesauce with thawed (but not reconstituted juice). Cover dryer trays with plastic wrap, or line large cookie sheet with plastic wrap. Spread fruit thinly on plastic wrap. Sprinkle with chopped nuts, if desired. Dry in dehydrator or oven (150-160º F) for 6-10 hours or until it is dry enough to be peeled from plastic wrap. Leather will be sticky due to the high sugar content. If leather is to be held for more than a few days, refrigerate or freeze.

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Demonstration—Taste Test Stored Foods

Taste preferences are different for every individual. What one may find unacceptable, another may notice no difference. Following are ways to help participants understand the difference between taste preferences, biased mind sets, and see the effect of them.

1. Prepare a loaf of bread using 20+ year old wheat and fresh ground wheat. Be careful to keep all other variables identical. The only difference between the two loaves should be the age of the wheat flour. The older wheat will produce a more compact loaf of bread. Slice the loaf and allow participants to describe the bread.

2. Conduct a taste test of stored dried milk. Sometimes dried milk carries with it the stigma of being less than desirable. Taste preference may be based on a mental bias or on the age of the milk rather than the milk. Also some brands of dry milk are more acceptable in taste to some individuals than are others. Prepare the following samples:

   fresh nonfat dry milk
   week old fluid skim milk
   5+ year old nonfat dry milk
   ½ whole milk, ½ non-fat dry milk
   Alternative brand of non-fat dry milk, if desired

   Place samples in unidentified pitchers and label A, B, C, D, etc. Do not place sample letters in the same order as the answer sheet. Keep a hidden record of which sample belongs with each letter. Pour a sample of each milk and allow participants to taste. Participants identify, by taste, which sample is which type of milk and record their answers on the handout form. After all have had the opportunity to sample the milk, tell participants which samples were which. Discuss answers with participants. Why didn't they identify the same thing? Some will accept the older milk, some will not—but will accept the fresh dry milk. Some may not be able to distinguish between the fresh dry milk and the older fluid milk.

3. Provide samples of old stored foods and fresh foods to show color and odor changes.

4. Prepare a sample of cooked dry beans using fresh dry beans and beans which have been stored for longer than 5 years, preferably 10 years. The older the beans the harder the texture.

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Stored Milk Taste Test

Taste the samples of milk provided and identify which sample fits the different types of milk listed below. Place the correct sample letter next to the type of milk. More than one letter may be placed next to a sample, or there may not be a sample provided for a type of milk—in which case leave the space blank.

_____ Fluid skim milk

_____ Non-fat dry milk

_____ ½ fluid skim milk, ½ non-fat dry milk

_____ ½ fluid whole milk and ½ non-fat dry milk

Stored Milk Taste Test

Taste the samples of milk provided and identify which sample fits the different types of milk listed below. Place the correct sample letter next to the type of milk. More than one letter may be placed next to a sample, or there may not be a sample provided for a type of milk—in which case leave the space blank.

_____ Fluid skim milk

_____ Non-fat dry milk

_____ ½ fluid skim milk, ½ non-fat dry milk

_____ ½ fluid whole milk and ½ non-fat dry milk

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9. Rotating and Keeping an Inventory

Teaching Notes

Keeping an inventory of food stored will help ensure that food is used in a timely manner and help assess storage needs for individual households. It will also help remind you of where the food has been stored.

1. Update inventory on a regular basis—every 6 months, every year, etc. Set a time that is easily remembered as a reference point and a personal reminder it is time to update (such as your birthday, anniversary, New Years, etc.). This date should have significance to you so it will be remembered.

2. The type of inventory used is not so important as the fact that you have an inventory and keep it updated. Every household is different—different storage needs and locations. An inventory should be as personalized as the household is individualistic.

3. Keep inventory flexible to accommodate change in needs, taste, lifestyle, etc.

4. Keep it simple—the simpler the method the more likely it will be used.

5. Keep is accessible. Place it where it is most likely to be seen and used, for example: use a clip board hung near the storage area, tape inventory on the storage area (i.e., freezer), keep inventory thumb-tacked to a family bulletin board, keep inventory in a notebook next to pantry, other ideas.

6. Keep a master inventory of all storage areas in your home (freezer, fruit room, under the bed, top of closet, etc.). This master inventory need not be more than just a list of where food is stored.

7. Label and date all storage. Practice FIFO (First In First Out). Place newer items behind older items so when an item is taken from the shelf the oldest is reached for first.

8. The following are possible ideas for keeping an inventory and rotation. They may be used separately or combined with another method to make it more efficient for you.

    A. Tally marks.
    Make a list of the foods in storage. For each unit stored (pound, quart, bag, etc.) make a single tally mark to the side of the food. Each time a unit is taken from storage make a cross through the tally mark. Every time more food is added to the storage add additional tally marks. This method is a quick visual way of seeing how much is on hand and how much has been used.

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B. Running Totals

For this method make a list of foods in the storage area—freezer, canned, etc. (see handout **"Inventory Sheets"**). The handout may be duplicated as needed. In the first column indicate how much of the item is needed for a year's supply. In the next column write down how much of the food is currently on hand. In each of the following columns record the date new food was added to the storage and the amount. Place a plus sign next to the amount. Each time food is taken from this storage location write down the amount with a minus sign next to it. Regularly (every month, 6 months, year, etc.) total all the additions and subtractions and compare the current amount on hand with the amount needed. This method will provide a way of tracking how much is being used, age of the product, as well as current amount on hand.

C. Grocery List

Make a running grocery list and keep it handy. As an item is taken from storage, add it to grocery list. Next time you shop the item is already on the list to remind you to pick up more.

D. Other Ideas:

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Inventory

Storage Location:_____

Food Item	Amount		Dates Storage Was Added or Subtracted											
	Need	On Hand												

Copy as needed. Tape pages together to extend inventory space to the side

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10. Where and How to Store It

Teaching Notes

To present this section on food storage, use the handout **"How and Where To Store It"** as notes. Visual presentation of ideas is extremely helpful for participants to envision how they may utilize, create, and properly store the foods they have accumulated. Following is a list of resources available for checkout from the Utah State University Extension Office in Salt Lake County. Call 468-3170 to reserve display. Items for checkout require a deposit which is refunded upon return of items.

Slide Sets

1. "Where To Store It," by Margaret Hopkin and Becky Low, USU Extension. Slides and script describe containers, storage places, and ideas which supplement the handout.
2. "Food Storage Simplified," by JoAnn Mortensen and Deloy Hendricks, USU Extension. Slides and script describe food storage in straightforward simple terms.

Display Set

Items to create a display on storage places. It is recommended that the display be set up on two or three 8-foot banquet tables for easy viewing. Display can be self explaining. When picking up display it is helpful to have a 4-door car with a wide back seat and an empty trunk, or a mini van, or a truck for easier transporting. Display includes the following items:

1. Mini stair unit with shelves built behind stair raisers.
2. Mock up of wall studs with shelves built between studs—stands on floor.
3. Storage bucket night stand with table cloth.
4. Mock up book shelves using storage containers for shelf supports.
5. Board and # 10 cans for creating a false floor.
6. Signs for placement on the display explaining storage ideas.
7. Empty cans and bottles to place in the display.
8. Various storage containers—acceptable and unacceptable.

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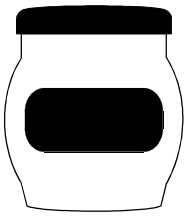
How and Where To Store It

Containers



1. Choose storage containers to fit the space you have available and the frequency with which you use the product stored. For example: If space is limited, large buckets could be replaced with gallon bottles, smaller jars, individual containers.

2. Storage containers are constructed using different chemicals. Some of these chemicals can leach out into food, if food is stored in it. If the containers were intended for food, but other non-food products were stored in them, these chemicals could also leach into the food. For this reason use **only food grade, moisture-proof, puncture proof, air-tight** containers.

3. Unacceptable containers for storage include garbage cans, garbage bags, cleaning containers, bleach bottles, kitty liter containers, etc. New galvanized garbage cans lined with a food-grade liner (the liner must say it is acceptable for food on the package) is an acceptable way of storing large quantities of grains and other foods.

4. Be cautious when using containers which are food grade, but once held food which had a strong odor or flavor. For example: empty pickle bottles collected from food service establishments (restaurants, schools, etc.) are acceptable storage containers, **but** they may make the food stored in them smell and taste like pickles.

5. Mylar bags are easy to stack and (if carefully opened) may be resealed. Bags may develop pin hole perforations allowing storage conditions to be sacrificed, and bags are not rodent proof.

Pest Control

Food storage is meant for people, not pests. In the best interest of the family budget, food conservation, health and well-being, pest infestation needs to be prevented and controlled. Even the cleanest home may at times experience problems. Pests may come into the home on the product or in its packaging.

A Begin control measures by purchasing foods from a reputable dealer.

B. Store foods in sturdy hard plastic, glass, or metal containers with tight fitting lids and no open seams or crevices.

C. Periodically check long term storage for pest infestation.

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Treatment Methods to Control Pest Infestations

1. Freezing

Small quantities of grain, 1 to 10 pounds, can be placed in a medium to heavy food grade plastic bag and placed in a deep freezer for 4 days. This will usually destroy all stages of any insect pests which are present.

2. Heat

This method works well for smaller quantities of food. When packaged foods such as beans, cereals, whole grains, nuts, and similar dried foods become infested they may be sterilized by heating in an open oven. Spread a shallow layer (less than ½ inch deep) of product on a cookie sheet or large pan. Place the pan in a pre-heated oven (140º to 150º F) for 30 minutes or more. Leave the oven door open to avoid over heating. This treatment should destroy all stages of the insect. Thoroughly cool the product before packing into storage container. If product had insect infestation, use a large fan to blow across the pan and remove any existing insect fragments. Excess heat will destroy the gluten making properties of protein in wheat and reduce the ability of the whole wheat bread to rise properly. Heat will destroy sprouting capabilities.

3. Dry ice

To fumigate home stored wheat and other products with dry ice, place about 3 to 4 inches of grain on the bottom of storage container. Place crushed dry ice on wheat and fill container with grain. Leave lid ajar on container for approximately 30 minutes to allow dry ice to vaporize displacing the oxygen. This method will control most adult and larval insects present but may not destroy all eggs. Check grain after 2-3 weeks for additional infestation. Amount of dry ice needed: 14 ounces for 100 pounds grain, or 1 pound dry ice for every 30 gallons of grain.

4. Chewing gum, bay leaves, ten-penny nails

If it appears these methods are working, it is only because there was no infestation to begin with. There is no scientific evidence these and other old wives tales prevent insect infestation or control infestations.

5. Pesticides

Some pesticides may be harmful when used around food or kitchen equipment. Others become harmful if used improperly or in improper concentrations. Select a pesticide which indicates on the label it is effective with the particular pest problem at hand. Second, select a product for in-door use. Third, follow the package directions on the container precisely. Fourth, never use pesticides on or near food.

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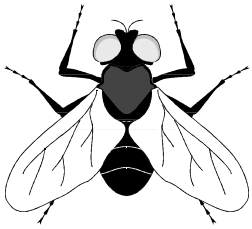
Rats, Mice, Ants, Cockroaches, Flies



Begin by being pro-active. Purchase storage products from reputable dealers. Deny pests food, shelter, and water. In other words, place food in hard plastic, glass, or metal containers. Keep storage area clean. Fix all leaks in taps, hoses, water lines, drains, etc. Dry out all standing water. Pest proof your home by fixing screens, repair or place weather stripping around doors and windows, caulk around water and gas lines entering the home, repair cracks in walls and foundations. Take out the garbage. Store garbage away from the house. Keep garbage area clean.

Weevil

Weevil are not harmful if eaten. But the food quality deteriorates the longer the food is exposed to the weevil. Food becomes stale, rancid, and "visually" undesirable. Inspect food, determine if the food will be thrown out or used. Place food in hard plastic, glass, or metal containers with tight fitting lid and no open seams or crevices—this will contain infestation to that container only. Wash storage area with hot soapy water. Pay special attention to cracks, crevices, etc., where grain and cereals may have fallen. Product may be placed in the freezer to destroy any remaining eggs and larvae. Weevil generally thrive on grain and cereal products, but they have been known to invade spices as well.

Indianmeal Moth

Moths present a major storage problem. Indianmeal moths are small moths that congregate around storage. They may be brought into the home with pet foods as well as food products. Throughly examine all pet foods and grain type products. If there is <u>any</u> infestation, place the product in closed containers and discard. Treat remaining product with one of the treatment methods listed above. Place product in air-tight containers. Thoroughly clean storage area paying particular attention to cracks, crevices, corners, etc., where food may have spilled. Recheck products and storage area every week for a month to ensure infestation is controlled.

Ants

Ants will continue to be a problem until the queen is destroyed. If possible (this sometimes requires great patience) follow the ants back to the nest. Simply pouring boiling water down in the nest will destroy the queen and end the problem. Pesticides applied to the nest are also effective.

In the meantime keep storage area and kitchen clean—floor, counters, sink, garbage area, etc. Pesticides may be applied around baseboards, home foundation, and all areas where ants may enter the home.

Fruit Flies

Fruit flies are a particular problem in the fall, but can be present any time. They are attracted to ripening fruit. Throughly check home for any fruit or spilled fruit juice. Discard fruit and thoroughly wash areas where fruit juice may have dripped or spilled.

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Ideal Storage Conditions

Ideal storage conditions will help extend quality of food stored. The ideal situation does not exist in every home (and many times cannot exist). **When the ideal is not available—do the best you can**. It is better to have some food stored in poor conditions and rotated than no food stored. When space is limited and storage conditions are less than ideal—rotate the food out in shorter periods of time. The ideal storage area is:

1. Cool—50º F. Usually a range between 50º to 70º F is acceptable.
2. Dry—Humidity between 50-70%
3. Dark
4. Well ventilated—Place items 6 inches off the floor, away from walls, away from heating vents and ducts, pipes, etc.
5. Secure shelves in case of earth quake. Tie or anchor shelves to wall studs, floors, or other shelf units to prevent tipping.

Finding Storage Places

Not all homes are constructed to be favorable for food storage (or, may not even have the space available to begin with), such as apartments, small homes, condos, trailers, or even large homes built for show. Finding space may be creative, but keep in mind, if the space is not ideal storage conditions, food must be rotated out in shorter periods of time to maintain quality and nutrients. Keep some kind of master inventory of what is stored and where it is stored in order to rotate foods in a timely manner. Following are a few ideas for finding storage space.

Begin by searching out the nooks, crannies, insets, gaps, next to's, and spots above/below existing storage.

- ❖ Place cases of food in tops of closets.
- ❖ Store food underneath hanging clothes in the bottom of closets.
- ❖ Store items under stairs.
- ❖ Place storage in corners of rooms.
- ❖ Store food under furniture and beds.
- ❖ Move books forward on bookshelves and place food storage behind the books.
- ❖ Place less used water storage in hard to reach corner cupboards.

Create Space

- ❖ Organize, and de-junk other storage to allow for food storage.
- ❖ Move seasonal clothing and replace with storage in clothes closet.
- ❖ Fill empty fruit jars with water or other storage—it's the same jar space empty or full.
- ❖ Cut holes in the side of boxed canned food—boxes become the shelves.
- ❖ Stack storage and use as a support for tables, book shelves, bed frames, etc.
- ❖ Add shelves to small alcoves or halls.
- ❖ Rather than a traditional coffee table, use chests and trunks—store food inside.
- ❖ Reassign space—move kitchen utensils into the open and store food in their place.
- ❖ Add shelves to back side of doors.
- ❖ Add shelves to back side of each stair riser.

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- ❖ Build drawers in front side of stair risers.
- ❖ Move non-food items (toilet paper) to less desirable storage locations like the attic.
- ❖ False floors in closets. (Arrange storage of equal height in a single layer on the floor, then cover storage with a board and piece of carpet.)

Build Space

- ❖ Rolling can shelves (see plans for building) are convenient, but not necessarily space saving.
- ❖ Remove wall board on inside of closets or in unfinished basements, build shelves between wall studs.

Other Ideas

- ❖ Keep an inventory of all food and where it is stored.
- ❖ Stick to a system of removing food from storage and place in daily use pantry areas.
- ❖ Date all store items. Practice FIFO (First In, First Out).
- ❖ Make equipment serve dual purposes, example—quilt frames as a jar support on shelves.
- ❖ Place food needed for one month in a single box, date or number boxes for easy rotation.
- ❖ Stack buckets on top of each other with board between for support—prevents crushed lids.

Your ideas...

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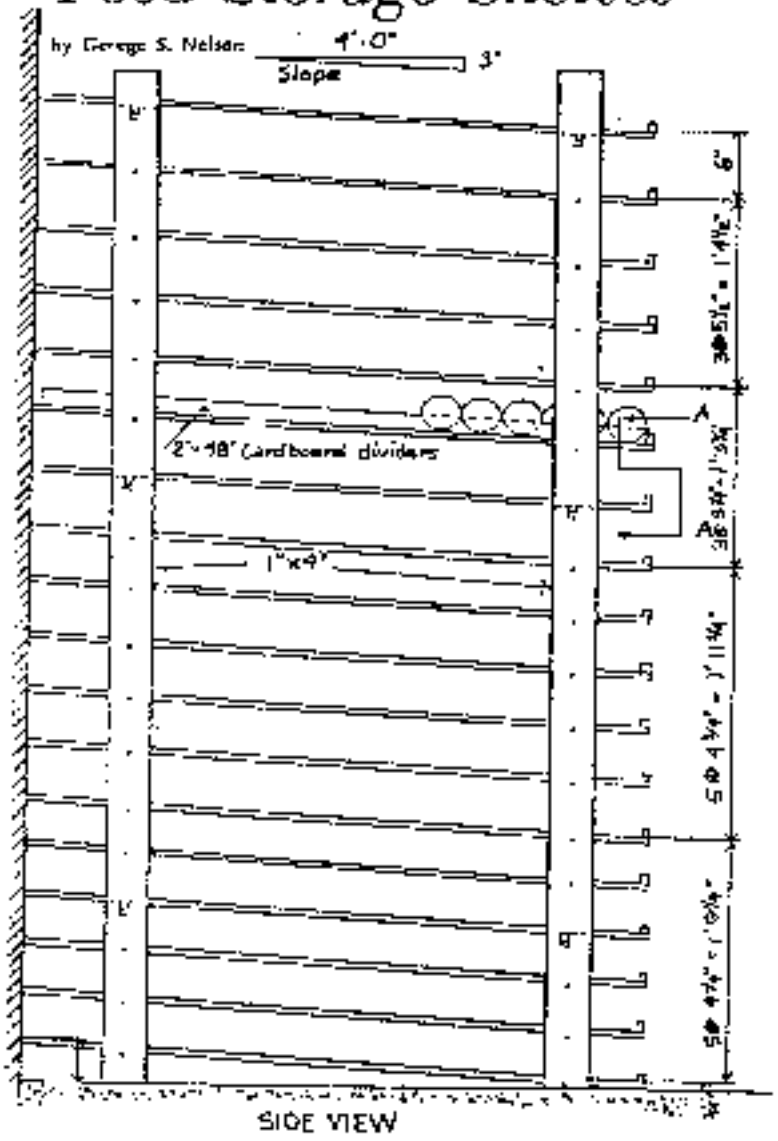
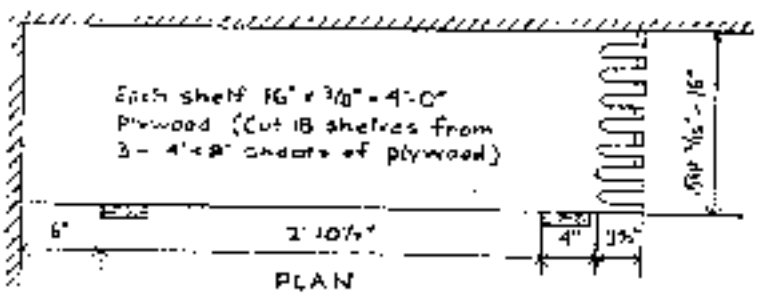
FOOD STORAGE SHELVES

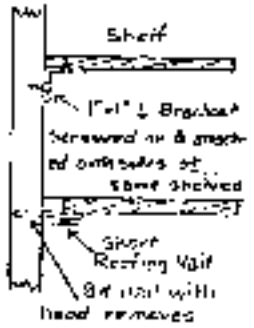
Utah State University

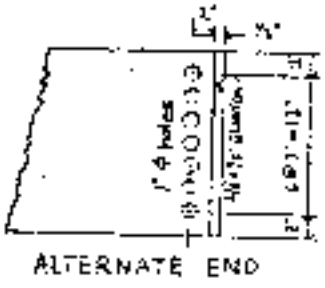
A practical plan for

Food Storage Shelves









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11. "Use It or Lose It..." Stored Wheat, Rice, Dry Milk, Beans

Teaching Notes

The teaching notes are the same for each of the stored foods: wheat, rice, dry milk, and beans. It is recommended that life sustaining foods be stored. While no exact formula has been given for what to store—wheat, rice, dry milk, and legumes are often used as a starting point. Frequently, they are stored and too often forgotten. It is an investment to store these food resources, but today our insatiable desire for convenience, speed, and refined taste often push these food items to the back of the storage where they sit and "wait for the disaster" that will force them to be consumed. Unfortunately, even the best storing items do not last forever. The longer they are stored the poorer the quality, the less desirable they are, and the greater the likelihood they will be discarded. The investment and security are lost. This section, including the handouts **"Wheat," "Dry Milk," "Rice,"** and **"Beans,**" is intended to provide ideas rather than be a cookbook. For additional recipes visit your local library or bookstore.

Practical Use of Stored Items

It is more practical to incorporate something new into the familiar (practical application) than to abandon the familiar and switch to the new. Following is a method for incorporating basic life sustaining storage items into the diet.

Idea 1: Plan menus. We eat the same main dishes about 80% of the time because of taste, habit, awareness, familiarity, etc. Using a menu helps to remind one of the choices that are available. Knowledge and skill create choice. A menu need not be a rigid plan of what to eat for Monday or Tuesday lunch and what to eat for Wednesday dinner. It can be as simple as creating a list of dishes eaten and liked by the family. Keep the list handy and refer to it when deciding what to fix tonight for supper. Create a master menu:

A. List foods eaten during the past week.
B. Create (brainstorm) a list of dishes family likes and will eat (part of choice is knowing what the choices are (see overhead **"List of Foods"**).
C. Break list into categories preferred by family (main dish, lunches, side dishes, etc.).
D. Post list on refrigerator for at least 2 weeks—add to list as dishes are remembered.
E. Involve family members in creating the list.
F. The created list should be at least 10-20 dishes long (length will add variety).
G. Evaluate current diet pattern. Is it storable? Is it realistic? Will the family eat it? (Fast food and TV dinners are not ideal long term storage items, and they are more difficult to incorporate basic food items into.)

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1. Should the items that do not store well be reduced? Does it reflect foods that are liked, but because of time required to prepare the dish it is unlikely to be used? Are the items on the list too expensive? Make the list practical and realistic.
2. Could the poor storing items (fast food and TV dinners) be replaced by a similar dish made from scratch at home?

H. Determine the number of dishes needed each week (month) to rotate a specific item out of storage in 3-5 years. For example plan 1/5 of all meals eaten to be from food storage. In other words if master menu has 20 meals listed, four meals or 1/5 of 20 meals should be from basic storage or at least include basic storage items.

I. Evaluate the list of foods created in A. Which of the dishes could include addition of basic storage items? For example: Meatloaf could be adapted to include wheat or beans with little or no change in the familiar quality of the dish. Write the addition of the basic item to the side of the dish (see overhead **"Adjusted List of Foods."**) By making a list of foods (or menu) and keeping it handy as a reference, and by adding the basic storage items to the list will serve as a reminder for which meals food has been stored, and what storage items may be included in the normal diet. (See individual recipe handouts **"Beans," "Wheat," "Rice," "Dry Milk"** for examples.)

1. Keep the dish familiar to and liked by the family.
2. Make small adjustments to recipes and increase changes as taste preference allows.
3. Avoid creating abnormal dishes. The further from a "normal" dish the recipe becomes the more inclined the dish will be rejected and classed as undesirable.
4. Add new dishes and recipes to the master menu which use basic storage.
5. Make a conscious effort to use the master menu and basic storage items.

Idea 2: Prepare convenient forms of basic item and store reasonable amounts. For example:

J. Home canned dry beans (see **"Bean"** handout)

K. Prepare Bulgur (see **"Wheat"** handout)

L. Cook and freeze item

Idea 3: Place basic storage items in convenient containers and in a convenient location. Put it in sight, make it handy to get and use.

M. Avoid large awkward containers in hard to reach places.

N. Clearly label and date contents of pantry storage.

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Overhead "List of Foods"

Main Dishes

Spaghetti
Chili
Meat Loaf
Tuna Noodle Casserole
Stroganoff
Hamburger Macaroni
Creole Green Beans
Stuffed Peppers
Chicken Tonight
Chalupa
Lasagna
Tacos
Ham 'n Beans
Shepherd Pie
Chicken Divan
Beef Gravy w/ Spuds
Chicken Noodle Soup

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Main Dishes—*Adjusted*

Spaghetti	***Add cooked dry beans***
Chili	***Add wheat or rice***
Meat Loaf	***Add dry beans or rice***
Tuna Noodle Casserole	***Add wheat***
Stroganoff	***Serve over rice***
Hamburger Macaroni	***Add dry beans***
Creole Green Beans	***Add dry beans***
Stuffed Peppers	
Chicken Tonight	***Serve over rice***
Chalupa	
Lasagna	***Add cooked dry beans***
Tacos	
Ham 'n Beans	
Shepherd Pie	***Add cooked dry beans***
Chicken Divan	***Serve over rice***
	Add Wheat
Beef Gravy w/ Spuds	***Serve over rice***
Chicken Noodle Soup	***Add rice***

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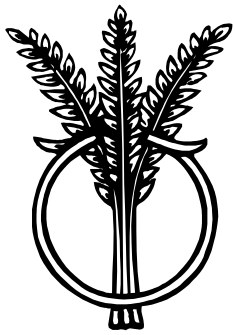
Use It or Lose It...Stored Wheat



This handout will not attempt to describe all the ways wheat may be used, but rather to share ideas and tips to aid in the rotation of wheat by incorporating it into the daily diet in a practical manner. If the wheat is to be used as a flour product the investment of a wheat grinder, either electrical or hand, is a valuable piece of equipment.

Varieties

Red Wheat Varieties

Hard red wheat varieties grown in Utah and other states are desirable for home storage and bread making. Some of the spring-planted and fall-planted hard red wheat varieties commonly grown in the Intermountain States are listed below.

Spring-planted varieties

1. Bannock
2. Borah
3. Fremont
4. McKay
5. Pondera
6. Rick
7. Vandal
8. WB 936

Fall-planted varieties

1. Bonneville
2. Garland
3. Hansel
4. Manning
5. Promontory
6. Ute
7. Weston

Hard White Wheat Varieties

Recently some new varieties, considered in a new category known as hard white wheat, have been developed. They are suitable for making bread and some people feel that these grains are more acceptable in whole wheat bread than red wheats. Most hard white wheats are spring planted, but some new varieties of hard white winter wheats are being developed. Golden 86 and Klasic are two varieties of hard white spring wheats that may be commercially available.

Make It More Convenient:

We are in a society where convenience is the norm. We want everything fast and with little work. Wheat takes a little time to prepare. Making it more convenient will increase the likelihood it will be used. For example:Pre-cook: Cooked wheat will store in refrigerator about 1 week.

1. Bulgur (dried form of cooked wheat): will last several months. Bulgur may

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be re-hydrated quicker than cooking wheat in the first place. A recipe for preparing bulgur is on the recipe sheet.

2. Freeze cooked wheat: Place cooked wheat in a thin layer on cookie sheet. Partially freeze, then place in freezer bags and store in freezer. Freezing it in this manner will allow you to remove amount desired for use without thawing the entire container.

Make It Accessible

Store wheat in smaller usable quantities in or near the pantry. We often use the most accessible items first. Make it accessible.

Bring It to Mind

Make menus (a list of main dishes family will eat) with notes to the side of the list indicating which dishes may be easily converted to a partial or complete wheat dish. Post the list of dishes in a readily viewed location (on the fridge, cupboard door, etc.).

Start Small and Keep on Going

Do not try to make changes or conversion to a wheat diet overnight. We eat the foods we do because of habit, taste preferences, and familiarity. Allow time to make changes. Make changes small and gradual.

Use with Strong Flavored Foods

Wheat is a strong nutty flavored grain. When becoming accustomed to eating wheat use it in strong flavored dishes (which will compliment other flavors rather than compete or overpower mild flavors).

Mellow It by Removing the Bran

Removing the bran from whole wheat flour will mellow flavor, lighten color, and smooth the texture. Sift the flour and remove the bran remaining in the sifter (save the bran and add to cereal, soups, stews, or products).

How to Cook Whole Kernel Wheat

Rinse one cup of clean whole kernel wheat, add 2 cups of cool water, and 1 teaspoon salt. Allow wheat to soak overnight or for 12 hours. Place rehydrated wheat in a pan and bring to a boil. It may be necessary to add water. Simmer for about 1 hour until tender. Wheat need not be covered with water since cooking by steam is effective. Water should be mostly absorbed at the end of the cooking time. The plumped, cooked wheat will keep in the refrigerator for about 1 week or frozen for longer periods of time.

Do It

Set a goal to use more wheat and stick to it. The goal may be as simple as making one meal or dish a month using whole wheat.

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Recipe Ideas

Whole Wheat Snickerdoodles

1	cup shortening, butter, or margarine
1 ½	cups sugar
2	eggs
2 ¾	cups whole wheat flour
2	teaspoons cream of tartar
½	teaspoon salt
1	teaspoon baking soda
2	tablespoons sugar
1	teaspoon cinnamon

Cream together 1 ½ cups sugar and shortening. Add eggs and beat well. Combine flour, cream of tartar, salt, and soda. Add to sugar mixture and mix well. Roll into approximately 1 inch balls. Combine 2 tablespoons sugar and cinnamon. Roll dough balls in cinnamon/sugar. Place on ungreased cookie sheet about 3 inches apart. Slightly flatten. Bake at 400 degrees for 8-10 minutes. Remove from cookie sheet and cool on rack. Makes about 4 dozen cookies.

Amount Per Serving (about 3 cookies)
Calories 293 Calories from Fat 137
Percent Total Calories From:
Fat 47% Protein 5% Carb. 48%

Nutrient	Amount per Serving		% Daily Value
Total Fat	15	g	23%
Saturated Fat	2	g	12%
Cholesterol	27	mg	9%
Sodium	162	mg	7%
Total Carbohydrate	36	g	12%
Dietary Fiber	0	g	2%
Protein	4	g	

Vitamin A 1% Vitamin C 0% Iron 6%

Whole Wheat Angel Food Cake

Teresa Hunsaker, USU Extension Home Economist in Weber County shares this recipe. 16 Servings

2	cups whole wheat flour
½	teaspoon salt
2	cups sugar
½	cup cornstarch
8	eggs, separated
1	cup cold water
1	teaspoon almond extract
1 ½	teaspoons vanilla
1	teaspoon cream of tartar

Grind wheat on fine setting. Combine flour with salt, sugar, and cornstarch. Sift together. (Remove bran and use for cereal.)

Separate eggs. Set whites aside. Beat eggs yolks until light and lemony colored. Slowly add water, almond, and vanilla. Beat 2 minutes. Add flour mixture and beat 3-4 minutes.

Using clean beaters, beat egg whites with cream of tartar until very stiff. Gently fold whites into cake batter. Place batter in ungreased angel food cake pan. Bake at 325º for 75 minutes, do not under bake. Cool cake upside down. Cut cake from pan and glaze with an orange glaze or as desired.

Amount Per Serving (1 1/16 of cake)
Calories 206 Calories from Fat 25
Percent Total Calories From:
Fat 12% Protein 10% Carb. 78%

Nutrient	Amount per Serving		% Daily Value
Total Fat	3	g	4%
Saturated Fat	1	g	4%
Cholesterol	106	mg	35%
Sodium	120	mg	5%
Total Carbohydrate	40	g	13%
Dietary Fiber	0	g	1%
Protein	5	g	

Vitamin A 3% Vitamin C 0% Iron 5%

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Blender Pancakes

6 - 8 Servings

1	cup wheat, uncooked
1 ½	cups milk, or see below **
1	egg
3	tablespoons sugar
1	teaspoon salt
1	tablespoon baking powder
2	tablespoons oil

Combine wheat and 1 cup of milk in blender. Blend on high for 1 minute. Add remaining ingredients and blend until smooth. Cook on hot griddle. Serve with favorite topping.
** Dry milk may be substituted. Add 4 tablespoons non-instant milk or ½ cup instant milk powder to wheat. Then use the same proportion water as called for with fresh milk.

Amount Per Serving
Calories 175 Calories from Fat 55
Percent Total Calories From:
Fat 32% Protein 13% Carb. 56%

Nutrient	Amount per Serving		% Daily Value
Total Fat	6	g	9%
Saturated Fat	1	g	7%
Cholesterol	33	mg	11%
Sodium	453	mg	19%
Total Carbohydrate	24	g	8%
Dietary Fiber	1	g	2%
Protein	6	g	

Vitamin A 2% Vitamin C 1% Iron 5%

Half Wheat Bread

(Bread Machine)

1	cup warm water, plus 1 tablespoon
3	tablespoons honey, or 3-4 tablespoons brown or white sugar
1 ½	cups whole wheat flour, use up to ½ cup more, if needed
1 ½	cups flour
2	tablespoons regular nonfat dry milk
1 ½	teaspoons salt
2	tablespoons butter or margarine
2	teaspoons yeast

Add ingredients according to order listed or according to specific bread machine instructions. Follow instructions for bread machine. Makes 1 ½ pound loaf.

Amount Per Serving (1 slice - 8 slices per loaf)
Calories 223 Calories from Fat 32
Percent Total Calories From:
Fat 14% Protein 11% Carb. 75%

Nutrient	Amount per Serving		% Daily Value
Total Fat	4	g	5%
Saturated Fat	2	g	10%
Cholesterol	8	mg	3%
Sodium	475	mg	20%
Total Carbohydrate	42	g	14%
Dietary Fiber	1	g	2%
Protein	6	g	

Vitamin A 2% Vitamin C 0% Iron 7%

Bulgur

Bulgur is a pre-cooked, dried cracked wheat. In the Middle East its use in the daily diet dates back to Biblical times. Because it is pre-cooked, it aids the use of wheat in recipes. To prepare:

1. Wash wheat in cool water and discard water.
2. Cover wheat with water, 2-3 times the amount of wheat. Steam until water is absorbed and wheat is tender (about 35-40 minutes).
3. Spread cooked wheat, thinly, on cookie sheet and place in 200º F oven to dry (leave door open). Wheat must be very dry in order to crack easily (2-3 hours). A food dehydrator may be used.
4. Crack wheat in a mill, grinder, or in blender. (This step is optional, but produces a finer kernel.)
5. Store in air tight container on shelf.
6. Re-hydrate for recipes calling for "cooked wheat" or "cooked bulgur" by adding twice as much liquid as bulgur and boil 5-10 minutes. Bulgur will be approximately double in volume.

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Coleslaw

For an interesting flavor, prepare your favorite coleslaw recipe and add from ¼-1 cup of cooked whole wheat, bulgur, or cracked wheat.

Wheat Meat Loaf

8 Servings

1	cup bulgur or cracked wheat (dried)
1 ½	pounds ground beef, or sausage
2	eggs, (½ cup powder egg)
¼	cup onions, finely chopped (2 tablespoons dry onion)
¾	cup milk
2	teaspoons beef bouillon granules
¼	teaspoon hickory salt
¼	teaspoon pepper
1	tablespoon Worcestershire sauce
¼	cup catsup, (optional)
1	teaspoon dry mustard, (optional)
3	tablespoons brown sugar, (optional)

Combine bulgur, beef, eggs, onion, milk, bouillon, salt, pepper, and Worcestershire sauce. Mix and place in loaf pan. Do not firmly pack mixture into pan or it will create a dense texture. Bake at 350 degrees for 1 hour. If desired, mix together catsup, dry mustard and brown sugar. Spread over meatloaf last 15 minutes of baking.

Amount Per Serving
Calories 279 Calories from Fat 134
Percent Total Calories From:
Fat 48% Protein 31% Carb. 21%

Nutrient	Amount per Serving		% Daily Value
Total Fat	15	g	23%
Saturated Fat	6	g	29%
Cholesterol	116	mg	39%
Sodium	207	mg	9%
Total Carbohydrate	15	g	5%
Dietary Fiber	0	g	1%
Protein	21	g	

Vitamin A 2% Vitamin C 1% Iron 12%

Chicken Divan w/Bulgur

6 Servings

2	10 oz. packages frozen broccoli (or 3 cups fresh), cooked
1	pound boneless skinless chicken breasts, (or 2 cups cooked chicken)
½	cup bulgur or cracked wheat (dry)
1	10 3/4 ounce can cond. cream of chicken soup
¼	cup mayonnaise
1	teaspoon lemon juice
1	teaspoon curry powder
½	cup bread crumbs
1	teaspoon butter

Cook broccoli according to package directions or until fork tender. Cook chicken and cube. Arrange broccoli and chicken in casserole dish. Combine bulgur and 1 cup cooking liquid from broccoli (water may be used, if there is not enough cooking liquid). Pour over chicken. Combine soup, mayonnaise, lemon juice and curry, mix. Spread sauce over chicken. Combine butter and bread crumbs. Sprinkle crumbs over casserole. Cover and bake at 375 degrees for 45 minutes or until hot and bubbly. Remove cover last 15 minutes of baking to brown crumbs.

Amount Per Serving
Calories 312 Calories from Fat 121
Percent Total Calories From:
Fat 39% Protein 28% Carb. 33%

Nutrient	Amount per Serving		% Daily Value
Total Fat	13	g	21%
Saturated Fat	4	g	18%
Cholesterol	46	mg	15%
Sodium	596	mg	25%
Total Carbohydrate	26	g	9%
Dietary Fiber	1	g	6%
Protein	22	g	

Vitamin A 33% Vitamin C 110% Iron 15%

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Use It or Lose It...Dry Beans

Varieties

There are many different beans in the legume family. They store well, cost little, and provide a punch for the nutrition dollar. While the following is a partial list of legumes and a suggested cooking hint, beans may be interchanged in most recipes. Often names are interchanged.

Baby Lima —milk flavored. Serve as a vegetable or in casseroles.
Light Red Kidney—Excellent in any recipe calling for cooked beans.
Backeye Peas—Dry form of the popular pea. Cook with pork or chicken.
Navy—Medium-sized white pea bean. Great for baked beans and soup.
Dark Red Kidney—Colorful salad bean mainly sold in canned form.
Pink—Great barbecue style or cooked with other spicy seasonings.
Turtle or Black Bean—A favorite in southern Mexico and Caribbean. Great with rice.
Garbanzo or Chick Peas—Nut-like flavor. Ideal for salads and appetizers.
Pinto—Popular in chili, refried beans, and other Mexican dishes.
Great Northern—Larger than small white or navy beans. Good for baking.
Red—Dark red, pea-shaped. Use in any colored bean recipe.
Large Limas—Rich, buttery flavor. Cook with smoked meat or cheese.
Small White—Firm texture holds up under long slow baking.
Anasazi or Ancient Ones—Cooks in about half the time, sweeter flavor, mealier, less gas.

Bean Nutrition

A serving of beans and legumes is considered to be 1 cup cooked. Legumes are considered high in fiber, low in fat, good source of protein, carbohydrates, folate, and many trace minerals. They are also low cost, thus providing good nutrition for reasonable money, and store well.

Protein Complements

Animal protein contains all the essential amino acids and can stand alone as a protein choice. Due to the lack of one or more amino acids in plant proteins they need to be paired with either an animal protein or another plant protein to improve their quality. For example: Legumes or dry beans by be paired with seeds and nuts or with a grain (wheat, cornmeal, rice, oats, etc.) This is called protein compliments or protein pairs.

Food Safety

Dry legumes must be cooked completely before eating. For this reason it is <u>not</u> recommended you grind dry beans and then simply mix with hot water to make instant refried beans.

Gas

Gas is an undesirable side effect of eating legumes. The body lacks enzymes to digest some sugars in the beans. Since the sugars are not digested, they ferment in the digestive tract creating

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gas. Following are a few ways to help alleviate undesirable gas:

1. Soak beans a minium of 3 hours (8-12 hours better); discard soaking water.
2 Sprout beans—soak beans 2-3 days, changing water 3-4 times, until beans begin to sprout.
3. Add the lacking enzyme to the diet in the form of tablets or liquid; one commercial product is called "Beano."

Soaking Beans

1. Cover with twice as much water as beans and soak 8-18 hours in cool place, discard soaking water.
2. Quick soak by covering with twice as much water as beans, bring to a boil, boil 2 minutes, remove from heat and allow to soak 1 hour. Discard soaking liquid.
3. Do not salt soaking liquid—it will toughen the bean.
4. It is not necessary to soak split peas and lentils.

Cooking Legumes

Beans will increase double to triple during soaking and cooking. In other words 1 cup dry beans will produce 2-3 cups cooked.

The slower the beans are cooked the easier they are to digest.

If adding water to cooking beans is necessary, bring water to a boil before adding. Adding cold water to boiling beans will toughen beans and slow down cooking process.

Softening Old Beans

The older the bean the tougher it is and less digestible. Following are a few tips to soften old beans.

1. Cook and freeze. The freezing moisture in the bean helps to rupture the cell wall and create a more palatable product.
2. Pressure cook. Follow manufacture's directions for using pressure pan. Increase cooking time as needed to produce a desired texture.
3. Pressure "can" beans. This method makes a readily usable product as well as softening beans. Follow USDA canning instructions for pressuring.

Increasing Consumption of Beans

* Plan menus.
* Puree cooked beans and add to baked goods (bread, cake cookies, etc.).
* Prepare convenience foods such as home canned dry beans or cook and freeze for later use.
* Add whole or mashed beans to meatloafs, soups, stews, casseroles (in small amounts to begin with, then increase as desired, and as allowed by family taste preference).

Copies may be made for individual and non-profit use.

Home Canned Dry Beans or Peas

USDA Complete Guide to Home Canning, Bulletin # 539, printed 1994

Use any variety of mature dry beans. Approximately 1 - 1 ¼ cups (dry measure) will be needed per quart. (Or, 5 pounds will produce 7 quarts jars, 3 ¼ pounds will be needed for 9 pint jars.)

1. Wash and sort beans.

2. Hydrate by (1) Placing beans in a large pan and cover with water. Soak 12-18 hours in a cool place. Drain water; or (2) To quickly hydrate beans, you may cover sorted and washed beans with boiling water in a saucepan. Boil 2 minutes, remove from heat, soak 1 hour and drain.

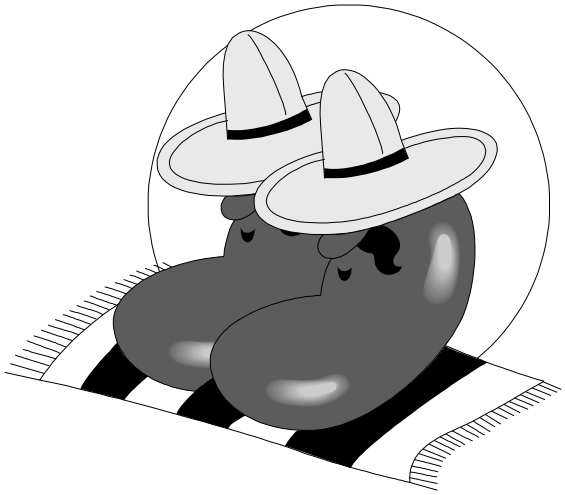
3. Cover beans soaked by either method with fresh water and boil 30 minutes. Add ½ teaspoon of salt per pint or 1 teaspoon per quart to the jar, if desired. Fill jars with beans and cooking liquid, leaving 1 inch head space.

4. Adjust lids and bands and process in pressure canner 90 minutes for quarts or 75 minutes for pints at: 13 pounds pressure for 4,000-6,000 feet elevations, 14 pounds pressure for 6,000-8,000 feet elevations (if pressure canner has a weight only, process at 15 pounds pressure).

It is suggested any home pressure canned foods be boiled 10 minutes before tasting.

Beans as a Fat Substitute

Dry cooked beans may be pureed and used in place of part of the fat in baked goods. Beans will help provide moisture to the recipe, but since pureed beans will not act the same way as fat in baking, the final product will be changed. Do not replace all fat with pureed beans. Begin by replacing ¼ to ½ and test the quality of the product.



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Recipe Ideas

Meat Loaf (with Beans)

8 Servings

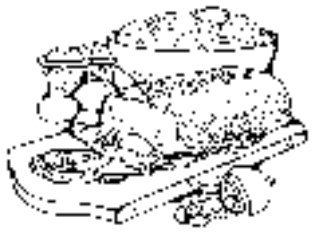
2	cups cooked pinto beans, or other beans
1 ½	pounds ground beef
2	eggs
¼	cup onions, chopped
1 ½	teaspoons beef bouillon granules
¼	teaspoon pepper
½	teaspoon sage
2	teaspoons Worcestershire sauce
1	teaspoon prepared mustard
3	tablespoons brown sugar (optional)
¼	cup ketchup (optimal)
¼	teaspoon nutmeg (optional)
1	teaspoon dry mustard (optional)

Drain beans well, then coarsely mash dry beans with a fork. Combine beans, beef, eggs, onion, bouillon, pepper, sage, Worcestershire, and prepared mustard, mix thoroughly. Place in loaf pan. Combine brown sugar, catsup, nutmeg, and dry mustard. Spread over meatloaf. Bake at 350 degrees for 1 hour.

Amount Per Serving
Calories 284 Calories from Fat 129
Percent Total Calories From:
Fat 45% Protein 31% Carb. 23%

Nutrient	Amount per Serving		% Daily Value
Total Fat	14	g	22%
Saturated Fat	5	g	27%
Cholesterol	112	mg	37%
Sodium	247	mg	10%
Total Carbohydrate	16	g	5%
Dietary Fiber	1	g	6%
Protein	22	g	

Vitamin A 3% Vitamin C 4% Iron 16%



Chalupa

8 Servings

1 ½	pounds pork loin
1	cup uncooked dried beans, pinto, white, red, kidney, or black
1	clove garlic, minced
2	teaspoons chili powder
1	teaspoon cumin
½	onion, finely chopped
1	4 oz. can chopped green chilies
½	teaspoon oregano
1	teaspoon salt

Wash and sort beans. To help reduce gas, soak beans overnight. Drain soaking liquid. Place all ingredients in large pan. Cover with water, bring to a boil, reduce heat to simmer and cook 4-6 hours or until meat falls apart tender. (Chilies will provide greater flavor if added the last ½ hour before serving.) Break meat into bite size pieces. Serve with tortilla chips, warm tortillas, chopped tomatoes, grated cheese, chopped onion, salsa, etc.

NOTE: The beans suggested for this recipe have similar nutrient content. The following nutrient analysis is an average of all beans mentioned.

This recipe may be cooked in a crock pot. Crock pot method of cooking will produce a lot of juice. It may be helpful to thicken the juice prior to serving.

Amount Per Serving
Calories 223 Calories from Fat 63
Percent Total Calories From:
Fat 28% Protein 43% Carb. 29%

Nutrient	Amount per Serving		% Daily Value
Total Fat	7	g	11%
Saturated Fat	2	g	11%
Cholesterol	53	mg	18%
Sodium	539	mg	22%
Total Carbohydrate	16	g	5%
Dietary Fiber	3	g	12%
Protein	24	g	

Vitamin A 9% Vitamin C 7% Iron 16%

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Hopping John
Black Eyed Peas and Rice

6 Servings

Hopping John is traditionally eaten on New Year's Day for good luck. "Eat poor on New Year's and eat fat the rest of the year." Whether eaten on New Year's or throughout the year, Hopping John is hearty and tasty.

1 ¼	cups black eye peas (½ pound dry)
1	ham hock
1	bay leaf
½	onion, chopped
½	cup celery, chopped fine
½	tablespoon sweet red or green bell peppers, chopped fine
1	cup rice, uncooked

Wash and sort black eyed peas. Cover with water and soak overnight.

Wash ham hock, cover with water and simmer 1 hour. Add black eyed peas, bay leaf, onion, chopped celery, bell pepper, and salt and pepper to taste. Add enough water to cover peas. Simmer for 2 hours, or until black eyed peas are tender. Taste and season to taste.

Cook rice according to package directions. Serve black eyed peas over rice. To complete meal, serve with cornbread and greens.

Amount Per Serving
Calories 227 Calories from Fat 48
Percent Total Calories From:
Fat 21% Protein 20% Carb. 59%

Nutrient	Amount per Serving		% Daily Value
Total Fat	5	g	8%
Saturated Fat	2	g	9%
Cholesterol	40	mg	13%
Sodium	23	mg	1%
Total Carbohydrate	34	g	11%
Dietary Fiber	1	g	4%
Protein	11	g	

Vitamin A 6% Vitamin C 6% Iron 12%

Tuna Bean Sandwich

8 Servings

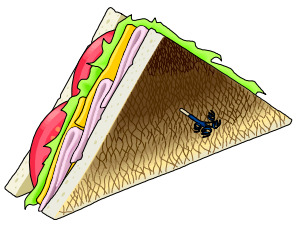
1	6 ½ oz. can canned tuna in water
2	cups cooked Great Northern beans, or other white bean
2	tablespoons onions, grated
1	teaspoon lemon juice
½	cup celery, finely chopped
2	teaspoons chicken bouillon granules
½	cup mayonnaise
	pepper, to taste

Drain beans well, mash. Combine all ingredients and mix well. Spread on bread, crackers, etc.

Amount Per Serving
Calories 179 Calories from Fat 103
Percent Total Calories From:
Fat 58% Protein 20% Carb. 22%

Nutrient	Amount per Serving		% Daily Value
Total Fat	11	g	18%
Saturated Fat	2	g	10%
Cholesterol	5	mg	2%
Sodium	248	mg	10%
Total Carbohydrate	10	g	3%
Dietary Fiber	1	g	6%
Protein	9	g	

Vitamin A 1% Vitamin C 3% Iron 6%



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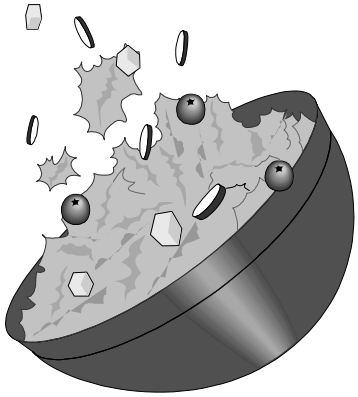
Black Bean and Ramen Salad

4 Servings

1	package ramen noodles
1 ½	cups black beans, or other cooked beans
1	red and yellow bell pepper, cut in strips
¼	onion, sliced
2	tablespoons cilantro, chopped
3	tablespoons red wine vinegar
1	tablespoon oil
2	tablespoons Dijon mustard



Remove flavor packet from ramen noodles. Partially break noodles and cook according to package directions. Drain, rinse with cold water and drain again. Combine noodles with beans, peppers, onion, and cilantro. Combine vinegar, oil, and mustard with flavor packet from noodles. Shake well. Pour over salad and toss to mix.

Amount Per Serving
Calories 285 Calories from Fat 88
Percent Total Calories From:
Fat 31% Protein 13% Carb. 53%

Nutrient	Amount per Serving		% Daily Value
Total Fat	10	g	15%
Saturated Fat	3	g	17%
Cholesterol	0	mg	0%
Sodium	985	mg	41%
Total Carbohydrate	38	g	13%
Dietary Fiber	2	g	6%
Protein	9	g	

Vitamin A 21% Vitamin C 60% Iron 9%

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Handout "Rice"

Use It or Lose It...Rice

Rice is a versatile, economical food for family meals. It is a good source of energy, and can supply vitamins and minerals to the diet.

It is generally classified as a grain, but in family meals it can be used as:

1. A cereal
2. A vegetable
    - A. As a substitute for potatoes
    - B. As a base for meat
    - C. In soups
3. A dessert
    - D. Puddings
    - E. Custards

Rice has been commonly known and used since ancient times. It has been and still is a medium of exchange in some countries. The custom of throwing rice at weddings is a survival of the ancient Chinese religious belief that rice is the symbol of fertility. It is easy to store, takes little storage space, and has no waste since it is completely edible. Rice has been grown in America since 1668, and technological developments have kept pace to provide the kind of rice needed for any purpose.

Even though there are 7,000 varieties of rice produced in the world, the consumer needs to be aware that generally there are only three different lengths of rice grain and five different kinds.

Lengths

Long grain rice is distinguished because its length is four to five times its width. The grains are clear and translucent. The grains remain distinct and separate after cooking.

Medium grain rice is about three times as long as its width. This type is less expensive than long grain rice. This is because it requires a shorter growing season and produces a higher yield per acre. It is also easier to mill than the long grained variety.

Short grain rice is only one and a half to two times as long as it is wide. It is generally the least expensive of the three lengths.

Kinds

With five different kinds of rice to select from, it is important to be able to distinguish between the different varieties available.

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Brown rice is the whole, unpolished grain of rice with only the outer fibrous, inedible hull removed. Brown rice requires more water and longer cooking time than white rice. It has a delightful, chewy texture, with a distinctive nut-like flavor. Brown rice shelf life is very short. It is not a good item for long term storage.

Regular milled white rice is rice from which hulls, germ, outer bran layers and most of the inner bran are removed in the milling process. The grains are bland in flavor and are fluffy and distinct when cooking directions are followed.

Parboiled rice—sometimes called processed or converted rice—has been treated to keep some of the natural vitamins and minerals the whole grain contains. It has been cooked before milling by a special steam pressure process. It requires longer cooking time than regular milled white rice, but after cooking the grains are fluffy, separate and plump.

Pre-cooked or instant rice—quick type—is completely cooked. It needs only to stand in boiling water to be ready for serving. Cooking this product will result in a gummy, indistinguishable mass.

Fortified or Enriched rice—This product is a combination of highly fortified rice with ordinary milled rice. A coating of vitamins and minerals—thiamine, niacin, iron, and sometimes riboflavin—is used to fortify rice. This coating adheres to the rice and does not dissolve with ordinary washing or cooking.

Wild rice—Wild rice is not rice at all, but the seed of a wild water grass found around the Great Lakes region. It is much more expensive than the types of rice described above. Many Americans have discovered this rice and developed a taste for it. The demand for it is almost greater than the supply.

Preparation

Some rules are a must in preparing rice. Due to the fact that the B vitamins are added to rice in the form of powder, much of the valuable nutrients are lost if the product is not handled properly.

A. Do not wash rice before cooking or rinse it after cooking. Rice is one of the most sanitary foods. Rice grown and milled in the U.S. is clean. Nutrients on the surface of the rice are washed away if it is washed or rinsed before cooking.
B. Do not use too much water when cooking rice. Any water drained off means wasted food value. Too much water makes soggy rice. Too little water results in a dry product.
C. Do not stir rice after it comes to a boil. This breaks up the grains and makes the rice gummy.
D. Do not leave rice in a pan in which it is cooked for more than 5-10 minutes or the cooked rice will pack.

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Aussie Rice Salad

12 Servings

This recipe comes from Redcliffe, Queensland, Australia. It is a favorite family gathering recipe of Lucy Strathearn.

1 ⅔	cups long grain enriched white rice, uncooked
2	apples
1	onion
1	sweet green pepper, ½ red and ½ green
1	12 oz. can whole kernel corn
1	cup raisins
	parsley, for garnish
1	tablespoon curry
⅓	cup balsamic vinegar, or other vinegar
¼	cup peanut oil, or salad oil
2	tablespoons sugar

Cook rice according to package. Cool.

Combine curry, vinegar, oil, and sugar. Shake well. Pour dressing over rice and toss to coat.

Leave peel on apple and remove core, remove seeds from pepper. Dice all vegetables to uniform size. Add apples, onion, red and green pepper, corn, and raisins to rice. Add more or less vegetables and fruit according to taste preferences and appearance. Garnish with parsley or additional bell pepper. Chill. Serve as a side dish with meats and barbecue.

NOTE: Fat grams per serving may be reduced by reducing the amount of oil used in dressing.

Amount Per Serving
Calories 220 Calories from Fat 45
Percent Total Calories From:
Fat 21% Protein 5% Carb. 74%

Nutrient	Amount per Serving		% Daily Value
Total Fat	5	g	8%
Saturated Fat	1	g	4%
Cholesterol	0	mg	0%
Sodium	4	mg	0%
Total Carbohydrate	41	g	14%
Dietary Fiber	2	g	6%
Protein	3	g	

Vitamin A 3% Vitamin C 19% Iron 9%

Jambalaya

6 Servings

Jambalaya is a traditional Creole rice dish. It may have ham, chicken, shrimp or use left over meats. The name comes from the French word "jambon" meaning ham and the African word "ya" which mean rice. The "a la" means with.

1	teaspoon margarine or butter
1	onion, small, chopped
½	cup celery, chopped (about 1 stalk)
1	green bell pepper, chopped
2	cloves garlic, minced
1 ½	cups ham, cubed
1	cup shrimp, small, shelled, uncooked
2	8 oz. cans tomato sauce
¼	teaspoon pepper
¼	teaspoon Tabasco pepper sauce (optional)
1	bay leaf
¼	teaspoon thyme
¼	teaspoon basil
1	cup brown rice, or white rice
2 ½	cups water

Melt butter or margarine, add chopped onion, celery, green pepper, and garlic. Saute until onion is tender and clear but not brown (about 5 min). A little water or chicken broth may need to be added to prevent vegetables from scorching; add 1-3 tsp liquid at a time. Add remaining ingredients, bring to a boil, cover, reduce heat and simmer for 30 minutes or until rice is tender. Garnish with chopped fresh parsley and small chilies, if desired.

NOTE: Shrimp may be replaced with chicken, sausage, fish, etc. Reduce cooking time by using instant rice and reducing the water to equal the amount called for on the package directions.

Amount Per Serving
Calories 232 Calories from Fat 38
Percent Total Calories From:
Fat 16% Protein 25% Carb. 58%

Nutrient	Amount per Serving		% Daily Value
Total Fat	4	g	7%
Saturated Fat	1	g	6%
Cholesterol	60	mg	20%
Sodium	898	mg	37%
Total Carbohydrate	34	g	11%
Dietary Fiber	1	g	6%
Protein	15	g	

Vitamin A 19% Vitamin C 51% Iron 14%

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Sushi

4 Servings

A favorite rice dish. Sushi was originally a way to preserve fish. Seafood in brine naturally fermented and acted as a natural preservative. Later on cooked rice was added to improve fermentation. Today sushi means vinegared rice which is garnished with or without raw fish or seafood. This easy version uses prepared vegetables, and is served in a pocket of seasoned fried bean curd called inarizushi-no-moto. It is garnished with fried eggs and pickled ginger root (if desired).

- 1 ½ cups short grain rice, uncooked
- ¼ cup rice vinegar, seasoned (or see below)
- 1 10 oz. can inarizushi-no-moto, or aburage (seasoned fried bean curd or tofu)
- ½ 7 ¾ oz. can chirashisushi-no-moto, (quick sushi vegetable mix)
- frozen peas, or chopped parsley for color
- 2 eggs
- 1 teaspoon cornstarch
- pickled ginger (optional)

Cook rice according to package directions. While still warm place rice in large bowl and sprinkle with seasoned vinegar. Gently mix rice and vinegar using a cutting fluffing motion. Add more or less vinegar to rice according to taste. Stir in quick sushi vegetable mix and enough thawed frozen peas for color.

Gently open sides of aburage and stuff filling into each pocket. Be careful not to overstuff and tear aburage pockets.

Make thin sheets of fried eggs by beating together eggs, cornstarch and 1 teaspoon water. Lightly oil a non-stick pan, heat. Pour in enough egg to just coat bottom of pan. Rotate skillet to coat. Cook until edges begin to curl up and surface becomes glossy. Slide egg sheets onto waxed paper or plastic wrap. Cut egg sheets into thin strips. Garnish sushi with strips of eggs and thin strips of pickled ginger.

TO MAKE SEASONED VINEGAR: Combine ½ cup rice vinegar, ½ cup sugar, and 1 teaspoon salt. Heat slightly and stir until sugar and salt are dissolved.

Amount Per Serving
Calories 460 Calories from Fat 82
Percent Total Calories From:
Fat 18% Protein 14% Carb. 68%

Nutrient	Amount per Serving		% Daily Value
Total Fat	9	g	14%
Saturated Fat	3	g	14%
Cholesterol	106	mg	35%
Sodium	866	mg	36%
Total Carbohydrate	78	g	26%
Dietary Fiber	1	g	3%
Protein	17	g	

Vitamin A 19% Vitamin C 2% Iron 25%

Creole Beef and Rice

8 Servings

- ¼ pound country sausage
- ¼ pound ground beef
- 1 cup celery, chopped (about 1-2 stalks)
- 1 onion, chopped
- 2 teaspoons Cajun seasoning, more or less to taste
- 1 ½ cups uncooked white rice
- 2 14 oz. cans canned stewed tomatoes
- 1 12 ounce vegetable juice, spicy
- 1 ½ cups frozen okra (optional)

Brown meat with onion, celery and Cajun seasoning, stir frequently. Add remaining ingredients. Add 1 cup water. Bring to a boil, cover, reduce heat and simmer 20-30 minutes.

Amount Per Serving
Calories 331 Calories from Fat 64
Percent Total Calories From:
Fat 19% Protein 14% Carb. 66%

Nutrient	Amount per Serving		% Daily Value
Total Fat	7	g	11%
Saturated Fat	3	g	13%
Cholesterol	23	mg	8%
Sodium	736	mg	31%
Total Carbohydrate	55	g	18%
Dietary Fiber	1	g	5%
Protein	12	g	

Vitamin A 29% Vitamin C 62% Iron 22%

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Handout "Dry Milk"

Use It or Lose It...Dry Milk

The Milk Facts

Besides being a delicious beverage, milk is important for a healthy diet. It is one of the richest sources of absorbable calcium. It is also high in protein, potassium, riboflavin, and vitamins A, D, and B12—all essential to optimal health. Research has found a diet rich in milk (low-fat) helps reduce high blood pressure, helps prevent osteoporosis (and reduce the consequences of this bone disease), and may help prevent colon cancer and suppress development of malignant tumors.

When dried, milk is a convenient and vital addition to the home food storage program. This information has been compiled to assist you in storing and rotating dry milk in home storage in order to maintain the optimum quality and usability of your investment.

Regular or Instant

Regular or instant dry milk is made from skim milk that has been dried by spraying into hot air. Instant milk is regular milk which has been further processed causing it to clump together resulting in a product easier to reconstitute with water. They both have the same nutrients. Regular, or non-instant, is more compact and requires less storage space. Dried whole milk is available, but because of the higher fat content the shelf life is much lower.

Purchasing Considerations

1. Buy milk which has been fortified with Vitamin A and D.
2. "No Preservatives" on the label are reassuring to consumers; however, preservatives are not legal and therefore no dried milk processed in the United States will contain preservatives.
3. Grade A indicates the quality of the milk used in the drying process. Essentially all processing plants producing dried milk use Grade A milk today.
4. "Extra Grade" on the label indicates the processing plant has met certain criteria and milk is slightly lower in butterfat and moisture content, more soluble, contains fewer bacteria, and contains fewer scorched particles.
5. The package should be waterproof and impermeable to air. Plastic films are good protection for short periods of time.
6. Do not buy more milk than you would normally use in a reasonable period of time. Once the package is opened the milk will not keep as long. Purchase package sizes to accommodate the use required by your family.
7. Date and label the milk. Rotate milk. (See storage below.)

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Storage

Shelf life of milk is based on the quality of the product. Undesirable chemical changes occur in milk the longer it is stored affecting the flavor, odor, and color. Care should be taken to insure the best possible storage conditions for dry milk. The following factors should be considered.

1. **Temperature —**The temperature at which milk is stored is the most important factor in determining its shelf life. The storage temperature should be as cool as possible. Deterioration of dry milk will be considerably slowed down by a reduction of the storage temperature. As a general guide, the following storage times and temperatures are given. Following is a guide to shelf life for milk stored at different temperatures (in unopened packages) with either nitrogen or carbon dioxide used to replace the air in the package. Storage times will be shorter in paper or in cardboard packages.

   50º F - 24 to 48 months
   70º F - 12 to 24 months
   90º F - 3 months

2. **Moisture**—Exclude as much moisture as possible by packaging in vapor-proof materials and storing in a dry area of the home, away from steam or areas where condensation could occur. Moisture causes caking and speeds up the undesirable changes in flavor.

3. **Oxygen**—Exclude the oxygen as much as possible to decrease the speed of chemical changes which cause flavor and odor changes. This can be accomplished by packaging in air-tight packaging materials, vacuum packing, and packing with nitrogen or carbon dioxide.

4. **Light**—Exclude as much light as possible. The chemical changes which cause changes in flavor and odor are accelerated by light.

Amount Needed

Assuming dry milk is consumed as a beverage as well as in cooking, the amounts needed for one year would be:

Fresh milk	adults (2 glasses per day): 45 gallons	youth (4 glasses per day): 91 gallons
Dry milk	adults (2 glasses per day): 36 pounds	youth (4 glasses per day): 73 pounds

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Reconstituting

Amount Needed	Use this much dry milk		Water
	Instant	Non-Instant	
1 quart	1 ⅓ cups	¾ cups	3 ¾ cups
1 pint	⅔ cups	⅜ cup (about ⅓)	1 ¾ cups + 2 tablespoons
1 cup	⅓ cup	3 tablespoons	scant cup
½ cup	3 tablespoons	1 ½ tablespoons	½ cup
¼ cup	1 ½ tablespoons	2 teaspoons	¼ cup

Using Dry Milk in Recipes

In any baked good recipe calling for milk, simply add the dry milk to other ingredients. Sift to blend the milk, then add water for the milk called for in the recipe.

For use in meat loaf, hamburgers, etc., use ¼ to ½ cup dry milk per pound of meat.

In mashed potatoes: Mash cooked potatoes, then add ¼ cup dry milk for each cup of potatoes. Use either the water the potatoes were cooked in or fresh milk to give the right consistency.

Cooked cereals: Add ¼ to ½ cup milk to each cup of cereal before cooking.

The following recipes are ideas to get you started using stored dry milk in cooking on a regular basis.

Magic Mix

5 cups

4 cups instant dry milk,
(or 2 ⅓ cups non-instant)
1 cup flour, (or ½ cup cornstarch)
1 cup margarine

Combine all ingredients. Mix well, until it resembles cornmeal. Store in air tight container in refrigerator 6-8 months.

Amount Per Cup
Calories 763 Calories from Fat 338
Percent Total Calories From:
Fat 44% Protein 19% Carb. 36%

Nutrient	Amount per Serving		% Daily Value
Total Fat	38	g	58%
Saturated Fat	7	g	34%
Cholesterol	18	mg	6%
Sodium	956	mg	40%
Total Carbohydrate	70	g	23%
Dietary Fiber	0	g	0%
Protein	37	g	

Vitamin A 76% Vitamin C 9% Iron 3%

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Cream Broccoli Soup

(using Magic Mix)

6 Servings

1	10 oz. package frozen broccoli
2	cups Magic Mix
1	cube chicken bouillon
2	tablespoons dried onion flakes
4	ounces sharp cheddar cheese

Combine bouillon cube, onion, and broccoli. Cook in about 4 cups water until broccoli is almost tender.

Combine MAGIC MIX with about 1 cup of the broccoli cooking liquid. Stir until smooth. Add mixture to cooked broccoli and bring to a boil. Grate cheese and add to broccoli. Heat to melt cheese. NOTE: Soup may be thinned by adding additional water or thickened by adding additional MAGIC MIX.

Amount Per Serving
Calories 359 Calories from Fat 173
Percent Total Calories From:
Fat 48% Protein 21% Carb. 31%

Nutrient	Amount per Serving		% Daily Value
Total Fat	19	g	30%
Saturated Fat	6	g	32%
Cholesterol	26	mg	9%
Sodium	634	mg	26%
Total Carbohydrate	28	g	9%
Dietary Fiber	1	g	2%
Protein	19	g	

Vitamin A 39% Vitamin C 59% Iron 4%

Fudgesicles

about 10 Servings

This is a fun way of using stored dry milk to make a tasty treat.

½	cup sugar
2	cups Magic Mix
3	tablespoons cocoa, (2-3 tablespoons)
2	cups water
1	teaspoon vanilla
½	cup evaporated lowfat milk

Combine in a saucepan sugar, magic mix, and cocoa. Mix well. Stir in water. Stir over medium heat until pudding bubbles. Add vanilla and beat. Stir in evaporated milk, and cool. Stir again then pour into ice cube trays, or small paper cups. Insert a plastic spoon in each. Freeze.

Amount Per Serving
Calories 212 Calories from Fat 73
Percent Total Calories From:
Fat 34% Protein 16% Carb. 49%

Nutrient	Amount per Serving		% Daily Value
Total Fat	8	g	12%
Saturated Fat	2	g	8%
Cholesterol	4	mg	1%
Sodium	219	mg	9%
Total Carbohydrate	26	g	9%
Dietary Fiber	0	g	0%
Protein	9	g	

Vitamin A 16% Vitamin C 2% Iron 2%

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Low-Fat Cream Soup Mix

This recipe replaces canned condensed creamed soups.

2	cups instant dry milk (or 1 ¼ cups non-instant)
¾	cup cornstarch
¼	cup chicken bouillon granules
2	tablespoons onion flakes
1	teaspoon basil
1	teaspoon thyme
½	teaspoon pepper

Combine all ingredients and mix. Store in air tight container until ready to use. Equivalent to 9 cans of cream soup.

TO SUBSTITUTE FOR 1 CAN CONDENSED SOUP:
Combine ⅓ cup dry mix (¼ cup if made with non-instant dry milk) and 1 ¼ cup cool water or liquid from vegetables. Cook over medium heat, stirring until thickened. Add thickened mixture to casseroles as you would a can of soup.

Amount Per 1 can equivalent
Calories 138 Calories from Fat 2
Percent Total Calories From:
Fat 1% Protein 27% Carb. 71%

Nutrient	Amount per Serving		% Daily Value
Total Fat	0	g	0%
Saturated Fat	0	g	1%
Cholesterol	5	mg	2%
Sodium	148	mg	6%
Total Carbohydrate	25	g	8%
Dietary Fiber	0	g	0%
Protein	9	g	

Vitamin A 13% Vitamin C 4% Iron 2%

Sweetened Condensed Milk

Makes about 14 oz.

1 ⅓	cups instant nonfat dry milk, (or ¾ cups non-instant)
¾	cup sugar
½	cup boiling water
2	tablespoons butter or margarine

Melt butter in boiling water. Stir in sugar. Place in blender and with blender going add dry milk. Blend until smooth. (Makes about 14 ounces.)

Amount Per Serving (10 per container)
Calories 137 Calories from Fat 22
Percent Total Calories From:
Fat 16% Protein 16% Carb. 68%

Nutrient	Amount per Serving		% Daily Value
Total Fat	2	g	4%
Saturated Fat	2	g	8%
Cholesterol	9	mg	3%
Sodium	111	mg	5%
Total Carbohydrate	23	g	8%
Dietary Fiber	0	g	0%
Protein	6	g	

Vitamin A 9% Vitamin C 1% Iron 0%

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Flan (caramel custard)

8 Servings

¾	cup sugar
1	14 oz. can sweetened condensed milk
1	cup half and half
½	cup milk
4	eggs

Preheat oven to 325 degrees. Caramelize sugar by melting in a skillet over medium high heat. Stir constantly until sugar melts and turns a golden brown. Do not burn sugar—it will ruin the taste of the flan. Immediately pour caramelized sugar into baking dish and coat bottom of dish. Set aside.

Combine remaining ingredients and beat thoroughly. Pour mixture into baking dish. Place baking dish inside a larger pan. Fill pan with "hot" water up to the level of the flan mixture. Place in hot oven. Bake about 45 minutes to an hour for small custard cups and 1 ½ to 2 hours for large custards, or until knife inserted in center of flan comes out clean. Baking dish may be covered to prevent flan from over cooking. Remove baking dish from pan holding water and cool 1 hour. Refrigerate for at least 3 hours.

To serve, run a knife around edges to loosen flan from dish. Invert flan onto serving plate.

NOTE: By substituting skim milk for half and half the fat will be reduced to 7 grams per serving, but the flan will not be as rich.

Amount Per Serving
Calories 323 Calories from Fat 97
Percent Total Calories From:
Fat 30% Protein 10% Carb. 59%

Nutrient	Amount per Serving		% Daily Value
Total Fat	11	g	17%
Saturated Fat	6	g	30%
Cholesterol	136	mg	45%
Sodium	115	mg	5%
Total Carbohydrate	48	g	16%
Dietary Fiber	0	g	0%
Protein	8	g	

Vitamin A 9% Vitamin C 3% Iron 3%

Yogurt

1 ¾	cups regular nonfat dry milk (3 cups instant)
4	cups water, very warm (not over 120 degrees)
⅓	cup plain yogurt, with active cultures, no additives

Combine dry milk and water. Stir with wire whisk until dissolved. Add yogurt and whisk. Pour into containers, cover and incubate in a warm area for 6-8 hours. Do not disturb during incubation. During incubation period the cultures multiply and thicken the milk. Refrigerate after yogurt has formed. Set aside ⅓ cup plain yogurt for starting next batch. Add fruit, jams, juice concentrate, chocolate milk mix, etc., for flavoring before eating.

Amount Per Serving
Calories 160 Calories from Fat 7
Percent Total Calories From:
Fat 5% Protein 39% Carb. 56%

Nutrient	Amount per Serving		% Daily Value
Total Fat	1	g	1%
Saturated Fat	1	g	3%
Cholesterol	10	mg	3%
Sodium	232	mg	10%
Total Carbohydrate	23	g	8%
Dietary Fiber	0	g	0%
Protein	16	g	

Vitamin A 1% Vitamin C 5% Iron 1%

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12. Building a Storage Program

Teaching Notes

Use handout **"Building Program."** Food storage is good, in that it provides a personal buffer against outside forces (economic, natural, political, etc.). But, it must also be placed in proper perspective. It is a resource and a resource should be wisely managed. Like any other resource it should be kept in balance with other resources. It has never been a wise practice to "rob Peter to pay Paul" or to deplete one resource at the sacrifice of another. When effort is steady and consistent it engenders knowledge and familiarity of the topic thus integrating it into one's life. For this reason it is not wise to spend a concentrated effort of time and money on food storage in order to simply check it off one's list of things to do. The more time and effort spent on the project the more the project will become a part of everyday life, practical and useable.

1. Avoid going into debt. This is "robbing Peter to pay Paul" and may create a situation much more serious than not having "food stored for a time of emergency."

2. Budget all expenses for the household and include a food storage budget.

3. Change the mind set from food storage only in time of disaster to food providently used daily. If the food is not to be eaten immediately, it is food storage. Purchase food to increase the amount stored. Purchase food to manage one's own storage program. Purchase food in accordance with personal and family tastes, habits, lifestyle, age, etc.

4. Allot an amount each shopping trip to increase storage amount (since food storage is being rotated and used daily—that means 80% of the food dollar should be going for food storage); therefore, use wise shopping strategies on every shopping trip.
    A. Shop with a plan and with a list—use the list of foods generated in the "How to Store What You Use" section.
    B. Compare prices:
        1. Compare the price of one brand to another. Try out new brands before purchasing in quantity to ensure the quality is acceptable to your household and will be eaten.
        2. Compare the price of one size package to another. Divide the size of the package into the price and compare the price per unit of different packages.
    A. Shop sales—Be cautious of shopping several stores and risking impulse buying at each store. Sometimes the 50 cents saved may cost $5.00 more in the long run
        1. Compare price of sale item to non-sale item—is it really less expensive?
        2. Do not be persuaded to purchase an item just because it is on sale.
        3. Be cautious using coupons, they are used to encourage sales for the store or the manufacturer.

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D. Buy foods in season.
E. Buy two items when one is needed.

4. Shop in quantity or bulk—but with wisdom:
   A. Be sure quantity will be used before spoilage occurs or quality deteriorates.
   B. Be sure quality of bulk item is high quality. Food will never be any higher in quality than the day you purchase it.
   C. Use wisdom when purchasing at bargain stores, discount stores, salvage stores, warehouses, etc. Items sold at these stores may be lower priced due to poor quality and safety. If the food is discarded later or causes illness, the bargain price will not be worth the cost. (Even after following the guidelines below the quality of the product inside the package may not be acceptable.)
      1. Check expiration dates—old items do not store well.
      2. Check quality of packaging for tears, openings, exposed product, signs of leaking, soiling, excessive dirt, etc.
      3. Check for signs of pest infestation.
      4. Check for signs of temperature abuse—frozen packages are distorted, warped or have large ice crystals; items which should be loose are frozen into a solid clump; frost build up; freezer burn, etc.
   D. Reject cans with dents on the seams, dents on the seal, dents large enough to hold at least one finger, cans with bulging lids, signs of leaking, rust, etc.

6. Ways to "increase" available money for food storage:
   A. Use non-fixed income for storage such as tax refunds, gifts of money, bonus checks, rebate checks, etc.
   B. Use entertainment money for storage by cutting back on (or cutting out) movies and movie rentals for 1 month, 2 months, etc.
   C. Eat at home rather than eating out; cut back on snacks; use money spent on snacks such as sodas, chips, candy, munchies; develop cooking skills and cook from scratch rather than with higher priced convenience foods; pack a lunch rather than eat out.
   D. Use vacation money by: choosing a less expensive vacation; shorten vacation time and use money saved for storage items; stay home for vacation; plan vacation wisely— lack of planning usually ends up in higher costs and less results.

7. Purchase foods from a reputable source. The handout gives a few sources for individuals to purchase food and equipment needed to build their own home storage program. It is not complete, nor was it intended to be complete and all encompassing, rather it is intended to be used as a springboard of ideas for individuals to consider. Create your own local list of resources and suggestions.

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Building Storage Program

Methods

The following ideas are to help in building up food storage:

1. Create menus, then use them.
2. Shop with a grocery list— match grocery list to food storage menus.
3. Know how much of what is needed for personal storage program—inventory storage and purchase items to complement current storage, personal tastes, and family preferences.
4. Build storage slowly. Rather than spending a great amount of money to purchase all storage at one time, it is more practical to build food storage at a slow and steady rate. Gradually adding to food storage will ensure a variety of shelf life dates and higher quality food over a longer period of time. Slowly adding storage will also allow time to adjust to food storage principles of storing what is used and using what is stored. Storing slowly and continually will allow time to practice using what is stored and developing skills.
5. Change mind set. Since food storage is ***any*** food stored for later use, that means all food purchased is food storage. The key is to increase the amount of food stored for later use.
6. Allot an amount of money each shopping trip to increase storage.
7. Buy two of an item, even though only one of the items is needed presently.

Bargain Buys

Use wisdom in bargain stores, discount stores, warehouses:

1. Check product date—old or poor quality food is no bargain.
2. Watch for safety—the following signs indicate poor choice.
    a. Dented cans—reject if:
        1. Dents on seams
        2. Dents on seal
        3. Dents large enough to hold at least one finger
        4. Sharp edges on dents
        5. Bulging lids
        6. Signs of leaking
    b. Expired or close to expired dates.
    c. Poor or compromised packaging:
        1. Package torn, open, or contents otherwise exposed.
        2. Distorted package or it appears to have been wet at some time.
        3. Package shows signs of pest infestation.
        4. Excessive dirt on package.
3. Purchase long term storage items from reputable dealer.

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Budgeting Food Storage Money

There is no need to go into debt to build storage. Priorities should be used in budgeting financial needs with food storage purchases. The following are a few ideas to increase money available for purchasing food storage.

1. Shop sales—be cautious of damaged, poor quality, or outdated goods which may be on sale—shop for quality.
2. Buy foods in season when prices are lower.
3. Buy in bulk— price compare to ensure bulk price is really cheaper, also be sure bulk will be used before shelf life expires.
4. Use tax refund, bonuses, rebate checks, gift money, and other money not a part of fixed income.
5. Forego spending money on entertainment one time and use money saved on storage (exchange entertainment—for example, rent a movie rather than purchase a movie ticket and use the difference on food storage, or watch TV instead).
6. Choose less expensive vacation, shorten vacation, or stay home for vacation and use money saved on storage.
7. Use brown bag for lunch, stay home rather than eating out, cut out commercial snacks, cook from scratch, etc., and used money saved on storage (plus it uses the items stored and develops skills for using storage).
8. Your ideas.

Resources

The following list is not meant to condone or promote any commercial establishment, but rather to give participants a springboard in finding food storage. Stores specialize in different items, some are a do-it-yourself rather than a retail outlet. Call store for details. **NOTE: This is not a complete list of possible stores nor is it all encompassing.** List last updated January 1999.

Yellow Page Listings
Emergency Supplies
Foods - Dehydrated
Food - Retail
Food - Equip. & Supplies
Vitamin & Food Supplement

All Major Food Store Chains
Check yellow pages

Huish Detergent
(801) 975-3100
3540 West 1987 South
SLC, UT

Emergency Essentials
(801) 467-1297
110 West 3300 South
SLC, UT

Smith & Edwards
(801) 731-1120
3936 N. Hwy 126
Farr West, UT

Gygi's
(801) 484-6261
1700 S 500 W (temporary)
3500 S. 300 W.
SLC, UT

Back to Basics
(801) 572-1982
11660 S. State Street
Draper, UT

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LDS Cannery
Welfare Square (801)240-7371
751 West 700 South
SLC, UT
Murray (801) 266-1460
4373 South Main
Murray, UT
Sandy (801) 561-0214
615 East 8400 South
Sandy, UT

Preparedness Resources
(801) 268-4381
3999 South Main
Murray, UT

Perma Pak Food Storage
(801) 268-9915
250 East 6400 South
Murray, UT

Livingston Distribution
(801) 566-0664
525 South Main
Midvale, UT

Honeville Grain Inc.
(801) 972-2168
1765 South 4250 West
WVC, UT

Kitchen Kneads
(801) 561-9616
7579 South 1700 West
West Jordan, UT

Lehi Roller Mills
(801) 768-4401
East Main
Lehi, UT

Future Harvest Foods
(801) 278-0713
8238 South 700 East, #103
Sandy, UT

Gregory's Wheat Shop
(801) 295-3405
930 S. 500 W.
Bountiful, Ut

K-TEC Corp
(801) 785-3600
420 N. Genva Rd
Lindon ,UT

Grandma's Country Store
(801) 886-1110
1160 S. Pioneer Rd, suite #3
SLC, UT

Bosch Kitchen Center
562-1212
8926 S. 700 E.
Sandy, UT

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